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TM 55-1680-308-24

TECHNICAL MANUAL

ORGANIZATIONAL, DS AND GS MAINTENANCE MANUAL

EJECTION SEAT, MODEL MK-J5D

(MARTIN-BAKER)

PART NUMBER 134AB80000

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WARNING

PRECAUTIONARY DATA

Personnel performing operations, procedures, and practices which are included or implied in this technical manual shall observe the following warnings. Disregard of these warnings and precautionary information can cause serious injury, death, or destruction of material.

MAINTENANCE

Only authorized personnel may perform work on this ejection seat and only in an authorized area. Ensure that TCR rocket motor locking pin is installed before removing seat from the aircraft.

Ensure that ground lock safety pins are installed unless preparing the aircraft for a mission or performing authorized maintenance on components of the ejection seat requiring removal of safety pins.

No attempt shall be made by organizational maintenance personnel to service the personnel parachute or drogue parachute.

CARTRIDGES

Primary cartridge O-ring is a special type and the correct type must be used. There is no serviceable substitute.

Never remove firing pin sear from primary firing mechanism until primary cartridge has been removed from primary cartridge breech.

When removing or installing firing cables (thick and thin) from firing pin sear of ejection gun primary firing mechanism, ensure firing pin sear safety pin is installed.

Use extreme caution when removing and handling primary, drogue and guillotine cartridges. These cartridges have a percussion-type primer cap. (See TM 9-1300-206.)

The auxiliary cartridges do not contain percussion-type primer caps, but are filled with an explosive powder which can be accidentally fired by either spark or flame.

DROGUE GUN

Use extreme caution when removing drogue gun barrel to prevent dropping the drogue gun cartridge.

Ensure that drogue firing pin does not protrude above bottom surface of firing body hole.

FACE BLIND

Operational check of the face blind should only be accomplished when the ejection seat has been disarmed.

DROGUE CHUTE

For proper operation, it is essential that drogue chute withdrawal line be routed over all other lines on top of the ejection seat.

Failure to remove webbing carrying handle will result in improper drogue parachute operation.

HARNESS

Do not dry harness assembly in direct sunlight as sunlight causes harness deterioration.

RELEASE MECHANISM

Keep hands clear of area below time release mechanism plungers. Plungers extend with great force.

Ensure rocket motor locking pin is installed before removing TCR motor.

PRIMARY CARTRIDGE INSTALLATION

The primary cartridge shall be installed in the ejection gun only after the ejection gun and ejection seat are installed in the aircraft.

Ensure plastic separators provided in the cartridge shipping container are not installed with cartridges.

REPAIR

Only minor sheet metal repair to the seat bucket assembly is authorized. Repair shall not be attempted on other seat structure.

DROGUE GUN ARMING

Do not attempt to arm the drogue gun until ejection seat is installed in the aircraft.

EJECTION GUN

Ensure ejection gun primary firing pin sear is installed and that firing pin does not protrude beyond bottom surface prior to installation of cartridge.

GUILLOTINE

Ensure guillotine firing pin sear is installed and that firing pin does not protrude above bottom surface prior to installation of cartridge.

Remove guillotine cartridge from breech prior to operational check of the manual override system.

UNSERVICEABLE CONDITIONS

If drogue gun or time release mechanism are dropped during installation on seat, the device shall be considered unserviceable.

The ejection seat, ejection gun and associated parts are considered unserviceable after being subjected to an ejection.

Rocket motor assemblies out of their respective container dropped more than 4 feet will be considered unserviceable.

RECHARGING CYLINDER

Ensure that the recharging cylinder contains only aviator's breathing oxygen. Do not recharge oxygen cylinder with anything else.

Do not allow any oil or grease to come in contact with compressed oxygen as the slightest trace of oil or grease may cause fire or explosion.

INSPECTION

To ensure proper shearing characteristics on ejection, use rivet, part No. MS20470A2-6, only. Incorrect rivet may cause malfunction of emergency oxygen system.

Ensure that the upper firing cable (thick) is routed over link line, under scissor shackle and over the lower (thin) firing cable.

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CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. Scope.

The Model MK-J5D Ejection Seat (figure 1-1) is designed to provide safe escape from an aircraft at a minimum of 60 knots at ground level (straight and level) through the maximum capability of the aircraft. After ejection, a personnel parachute is automatically extracted, opened, and the occupant separated from the ejection seat in preparation for a safe landing.

1-2. General Maintenance.

Prescribed maintenance on the ejection seat should be accomplished in a clean work area free of grease, oil and blowing dirt. All prescribed maintenance performed on this ejection seat shall be accomplished by qualified ejection seat personnel in accordance with instructions contained in this manual. Lubrication shall be limited to that specified in figure 3-5. Excessive lubrication should be guarded against since grease or oil combined with dirt is a source of abrasive reaction. Use of locally manufactured dust covers of waterproof material is recommended whenever the ejection seat is not installed in the aircraft.

1-3. Administrative Storage.

For storage information on Model MK-J5D Ejection Seat, refer to TM 55-1500-204-25/1 and Chapter 5.

1-4. Maintenance Forms and Records.

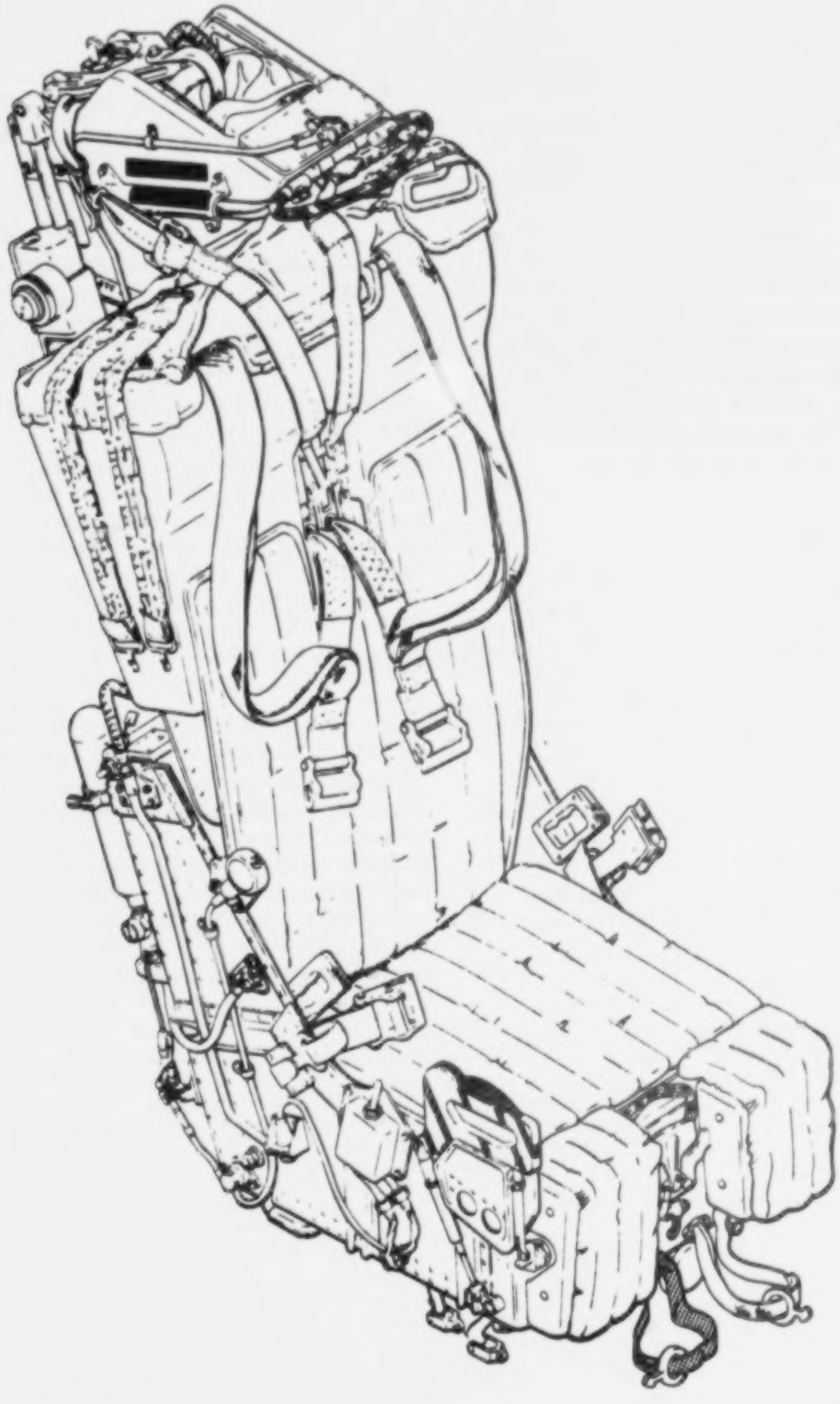
Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by DA PAM 738-751.

1-5 REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS.

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail you letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), direct to: Commander, US Army Aviation Systems Command, ATTN: AMSAV-MMD, 4300 Goodfellow Boulevard, St. Louis, MO. 63120-1798. A reply will be furnished directly to you.

1-5.1. REPORTING EQUIPMENT IMPROVEMENTS RECOMMENDATIONS (EIR).

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedure, please let us know. EIR's will be prepared using SF 368, Quality Deficiency Report. Instructions for preparing EIRs are provided in DA PAM 738-751, The Army Maintenance Management System (TAMMS). EIRs should be mailed directly to: Commander, US Army Aviation Systems Command. ATTN: AMSAV-MMD, 4300 Goodfellow, St. Louis, MO 63120-1798. A reply will be furnished directly to you.



10VJ5M-1

Figure 1-1. MK-J5D ejection seat

Section II. DESCRIPTION AND LEADING PARTICULARS

1-6. Description.

The Model MK-J5D Ejection Seat (figure 1-2) is a fully automatic personnel ejection seat. This seat provides for safe personnel ejection from the OV-1 aircraft at 60 knots ground level, during takeoff, and at all operational flight altitudes. Seat systems provide for automatic parachute deployment and separation of seat from occupant after ejection. The ejection seat assembly is composed of subassemblies and systems described in the following subparagraphs.

a. Basic Seat Assembly. The basic seat assembly (figure 1-1) consists of the following:

(1) A basic seat structure consists of a light frame and two side beams bridged by three cross-members and a lumbar contour support backplate which provides for the occupant's comfort and protection.

(2) The seat assembly also consists of the seat bucket, seat and back cushions, and thigh supports. The personnel lowering devices are stored in the thigh support cushions. Storage space for the survival equipment is in the survival kit container located under the seat cushion.

(3) The main beam assembly is the framework to which all the major components of the ejection seat are mounted. See figure 1-3 for main beam assembly details.

(4) The seat rail mounting is attached to the ejection gun by two guide tracks. The tracks mate with three sets of slippers on the main beam assembly. A plunger, engaging in the locking groove of the ejection gun primary cartridge breech, locks the seat in position.

(5) The seat bucket (29, figure 1-2) can be raised and lowered by an electrical seat actuating jack mechanism (see figure 1-4). A momentary toggle switch (13, figure 1-2) on the right side of the seat raises or lowers the seat bucket. When the toggle switch is pushed forward, the seat is lowered. When the toggle switch is pulled aft, the seat is raised. When the toggle switch is released, it returns to the middle (neutral) position.

b. Ejection Gun. A medium velocity, long stroke cartridge actuated gun provides initial thrust for the ejection seat and occupant. The pressure resulting from the explosion of the primary cartridge causes the seat to rise and, in turn, fire the lower and upper auxiliary cartridges. See figure 1-5 for details of the ejection gun firing.

c. Tip-Off Compensating Rocket (TCR). A TCR (M119), attached to the bottom of the ejection seat, is fired 9 inches before ejection gun tube separation (see figure 1-6). The thrust of the TCR positions the seat in the correct attitude for safe deployment of the drogue chute and optimal seat position for main canopy withdrawal. The TCR initiator is attached to a cable approximately 64 inches long. One end of the cable is attached to the stationary seat rails causing the cable dispenser (28, figure 1-2) to pay out the cable as the seat rises. When the cable has been completely paid out, the initiator ignites the TCR.

d. Harness. (See Figure 1-7.) The harness assembly, worn by the occupant is sized to fit his body. The parachute release fittings (6), located at the top of the harness assembly are connected to the parachute riser release fitting (5).

e. Leg Restraint Mechanism. (See Figure 1-8.) A leg restraint mechanism is provided to prevent injury to the occupant's legs. As the seat leaves the flight compartment, the dual leg restraint cords (2) tighten, pulling the occupant's legs aft and together against the thigh supports (38, figure 1-2). As the ejection seat moves farther upward, rivets in the leg restraint roller brackets (11, figure 1-8) shear off, freeing the lower end of the leg restraint cords from the deck of the aircraft. The occupant's legs continue to be held securely against the ejection seat by the upper cord lock and a snubber mechanism.

f. Drogue Gun, Drogue Parachute, and Personnel Parachute. (See Figure 1-2.)

(1) *Drogue gun.* One-half second after the drogue gun trip rod (27) pulls the sear from the drogue gun (26), the drogue gun fires. This propels a piston from the drogue gun which extracts the drogue parachute by means of a drogue line.

(2) *Drogue parachute.* A five-foot drogue parachute is housed in a rigid container at the top of the ejection seat. The drogue parachute is shackled to a restraining scissor attached to the top of the ejection seat main beam assembly. The jaws of the restraining scissor remain closed until allowed to open by the time release

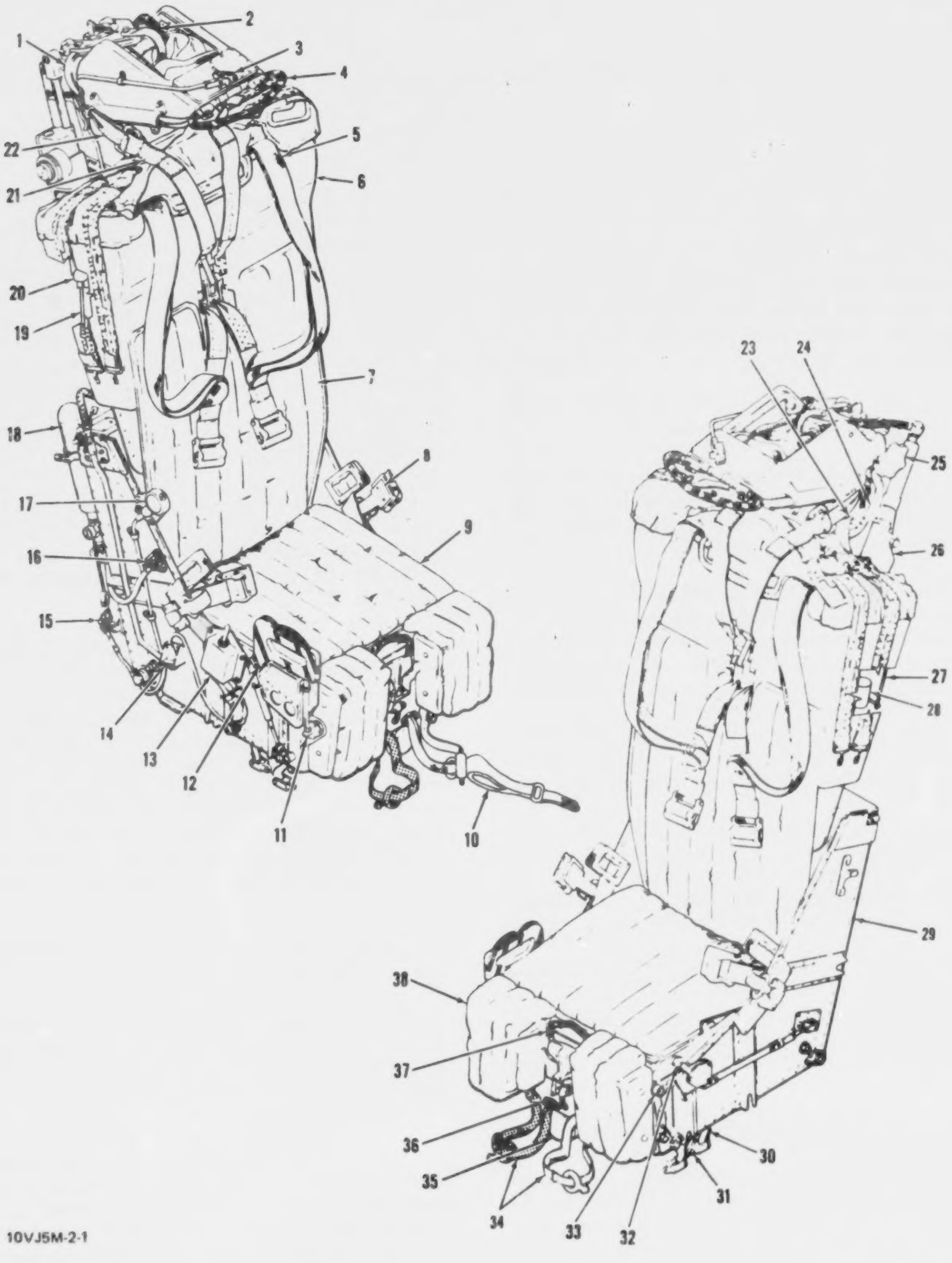


Figure 1-2. Ejection seat component location (Sheet 1 of 2)

KEY to Figure 1-2.

1. Link line
2. Drogue line
3. Face blind locking mechanism
4. Face blind handle
5. Personnel parachute riser
6. Personnel parachute container
7. Backplate with lumbar support contour
8. Occupant retention assembly
9. Rigid seat survival kit cushion
10. Leg restraint quick-release garter
11. Guillotine initiator
12. Manual override handle
13. Seat height adjustment switch
14. Electrical disconnect
15. Emergency oxygen quick-release pin
16. Oxygen quick-disconnect fitting
17. Emergency oxygen manual control
18. Oxygen cylinder
19. Time release mechanism trip rod
20. Time release mechanism
21. Parachute restraint strap (long)
22. Parachute restraint strap (short)
23. Guillotine head assembly
24. Link line
25. Top latch plunger (with handwheel installed)
26. Drogue gun
27. Drogue gun trip rod
28. TCR cable dispenser
29. Seat bucket
30. Leg restraint roller bracket
31. Leg restraint quick-release pin
32. Inertia reel manual control handle
33. Leg restraint cord lock release handle
34. Leg restraint cords
35. Tip-off compensating rocket motor
36. Snubber finger rings
37. Lower firing handle
38. Thigh supports

Figure 1-2. Ejection seat component location (Sheet 2 of 2)

mechanism (20). So long as the scissor is closed, the shackle and the drogue parachute remain securely attached to the ejection seat. When the jaws of the scissor open, the pull of the drogue parachute is transmitted, through a link line to the personnel parachute, extracting it from the container (6) for deployment.

(3) *Personnel parachute.* A 28-foot inflation aided personnel parachute is housed in a fiberglass container (6) near the top of the ejection seat. The personnel parachute provides a safe descent for the occupant at approximately 18 feet per second.

g. ***Time Release Mechanism.*** The time release mechanism (20, figure 1-2) is mounted on the upper right side of the ejection seat. Its function is to provide a time delay of approximately 1-3/4 seconds after the ejection seat has started to rise before allowing the drogue to extract the personnel parachute. A barostat, mounted on the time release mechanism, prohibits action above a present altitude of 14,000 to 15,000 feet. The time release mechanism accomplishes the following actions simultaneously by mechanical linkages:

(1) Allows the restraining scissor on the ejection seat to open. This releases the drogue parachute from its attachment to the seat structure enabling it to extract the personnel parachute for deployment.

(2) Releases occupant restraint points, freeing the occupant from the ejection seat for subsequent safe parachute descent.

h. Manual Override System.

(1) A manual override system is provided in case the automatic system malfunctions. The manual override system can be used in the following conditions:

(a) Bailout becomes necessary and ejection gun fails.

(b) Ejection gun fires, but drogue gun fails.

(c) Ejection gun and drogue gun fire, but time release mechanism fails.

(d) Ejection gun and drogue gun fire, time release mechanism functions, but scissor jaws fail to open.

(e) The manual override handle is also used for crash rescue or emergency egress.

(2) When the manual override handle (12) is pulled, the following actions take place:

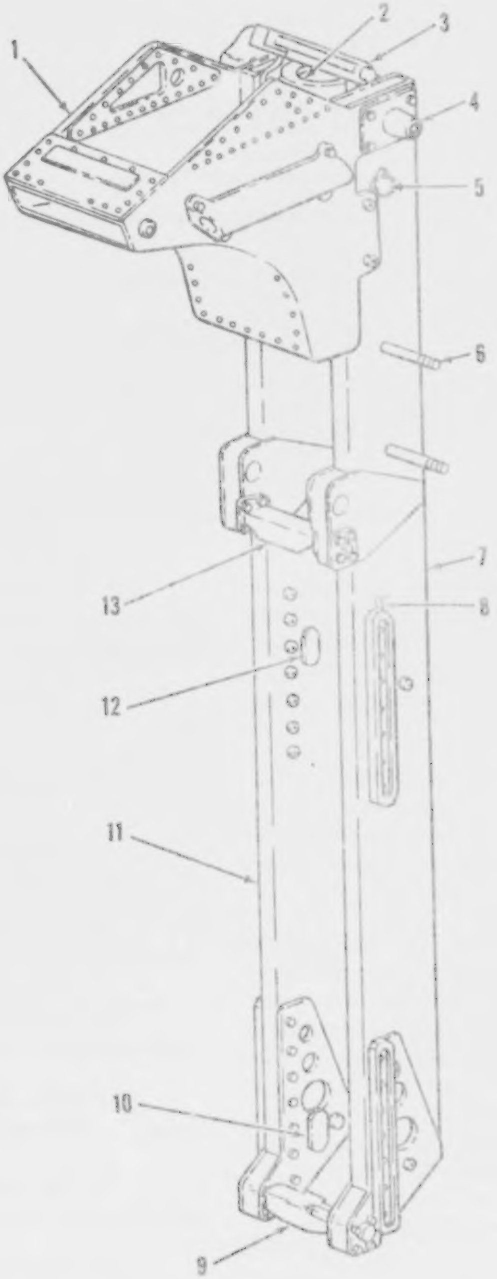
(a) The guillotine cartridge is fired causing the guillotine cutter to sever the link line.

(b) The leg restraint cords are released from the leg restraint cord locks.

(c) The rigid seat survival kit restraint lugs are released from the seat bucket.

(d) The loop strap lug is released from the harness lock mechanism.

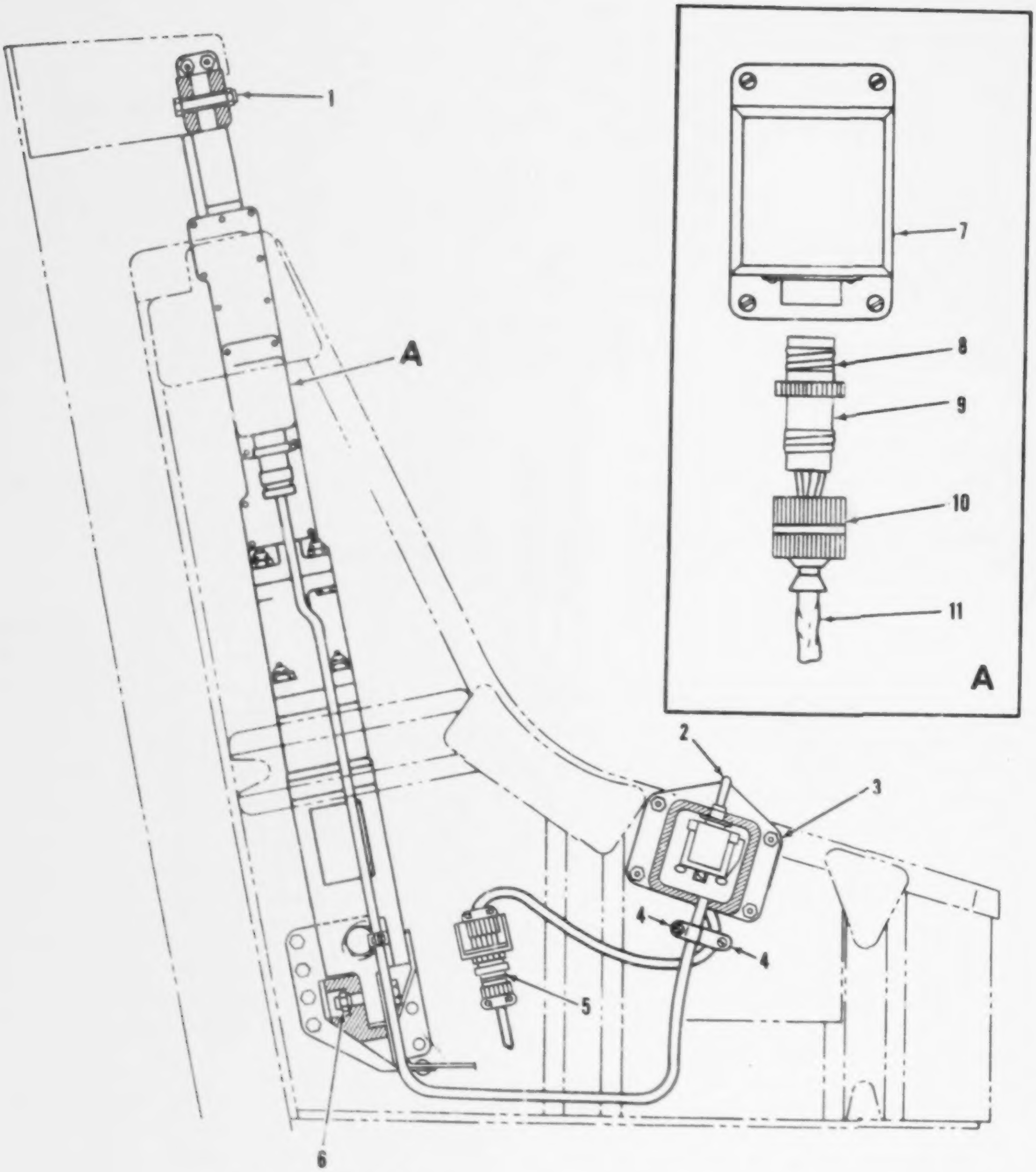
(e) The face blind and lower firing handles are locked.



1. HEAD BOX ASSEMBLY
2. TOP CROSSBEAM BLOCK
3. RESTRAINING SCISSOR
4. TOP LATCH MECHANISM
5. TOP SLIPPER
6. STUD
7. LEFT MAIN BEAM
8. BRACKET
9. BOTTOM CROSSBEAM
10. BOTTOM SLIPPER
11. RIGHT MAIN BEAM
12. MIDDLE SLIPPER
13. SEAT RAISING JACK BEAM

10VJ5M-3

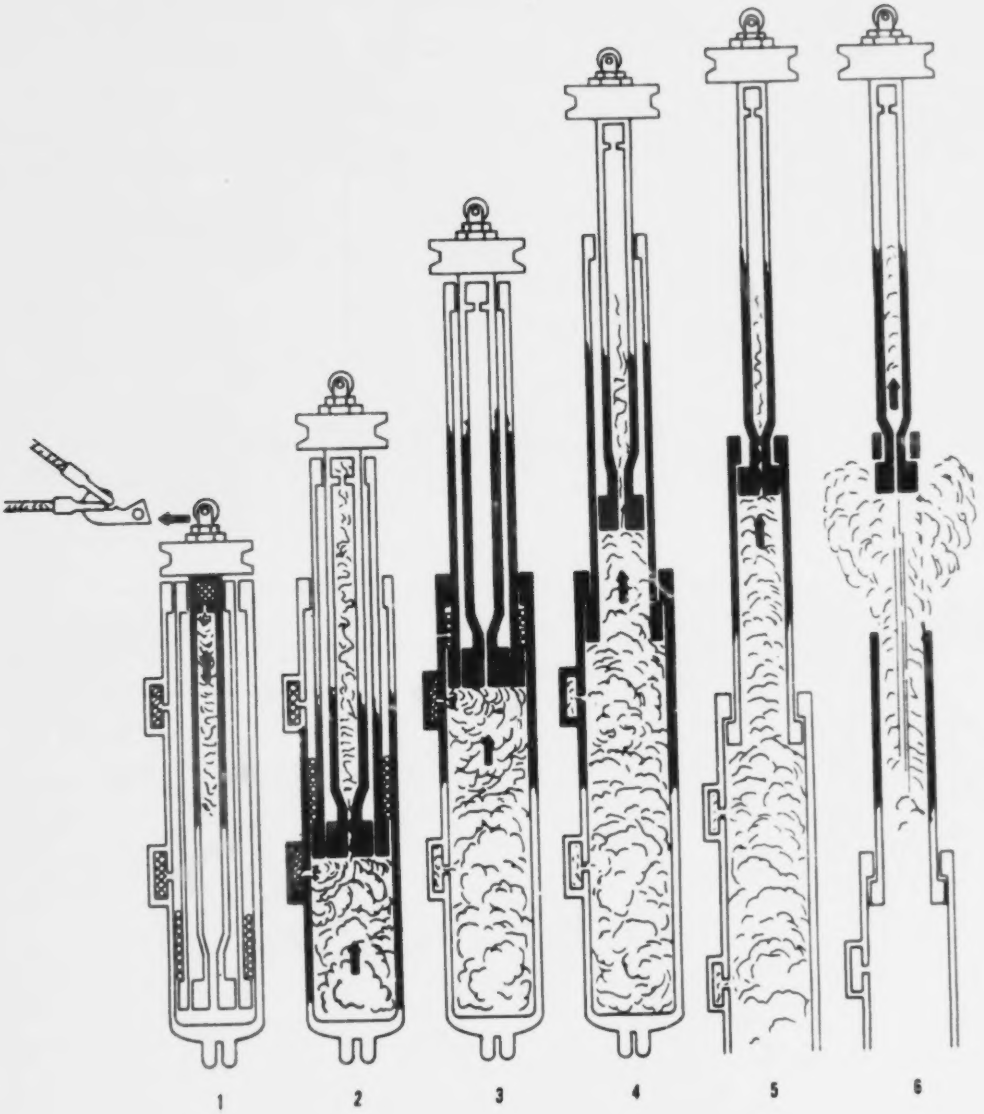
Figure 1-3. Main beam assembly component location



1. BOLT, WASHER, LOCKNUT
2. SEAT HEIGHT ADJUSTMENT SWITCH
3. BOLT, WASHER, LOCKNUT
4. CLAMPS
5. ELECTRICAL CONNECTOR
6. BOLT, WASHER, LOCKNUT
7. SEAT RAISING ACTUATOR
8. CONNECTOR
9. CONNECTOR NUT
10. COLLAR
11. ELECTRICAL CABLE

10VJ5M-4

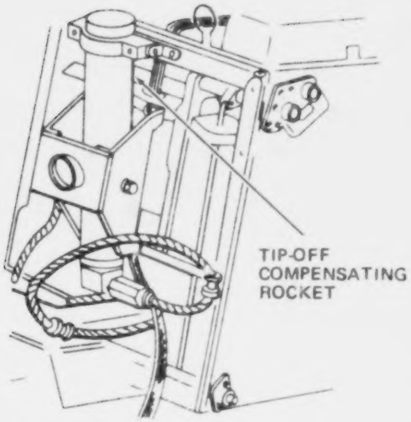
Figure 1-4. Seat actuating jack mechanism



1. Sear is pulled; firing mechanism pin fires primary cartridge.
2. Inner and intermediate tubes rise. After 14-inches of travel, port is opened and heat from primary cartridge ignites lower auxiliary cartridge.
3. After 17-inches more of travel, port is opened and upper auxiliary cartridge is fired.
4. Intermediate tube is stopped by action of pressure rings being compressed between intermediate tube piston and intermediate tube guide bushing.
5. Inner tube continues to rise; piston strikes inner tube guide bushing.
6. Inner tube guide bushing rivets shear. Bushing and inner tube leave ejection gun, propelling seat from aircraft, completing ejection gun stroke.

10VJ5M-5

Figure 1-5. Ejection gun operating sequence



10VJ5M-6

Figure 1-6. Tip-off compensating rocket (M119)

i. Automatic Emergency Oxygen System. The emergency oxygen system (figure 1-9) consists of a 22.5 cubic inch oxygen cylinder (13); filled with 1,800 to 2,000 psi of aviator's breathing oxygen, and a manual actuating knob (2) located on the upper right side of the seat bucket. An oxygen hose (6) from the oxygen cylinder is routed to the upper right side of the seat bucket and is held in place by an oxygen quick-disconnect bridle and lanyard (5). An additional oxygen hose (4) is routed from the quick-disconnect clamp to the occupant's face mask. The emergency oxygen system is automatically actuated upon ejection. As the ejection seat rises during ejection, a trip lever (30) is deflected downward and transmits the deflection to the bellcrank (24), pulling on the oxygen cylinder cable, fracturing a breakoff nipple within the oxygen cylinder, and releasing the oxygen supply. Since only a 1/4-inch pull on the cable is required to actuate the oxygen cylinder, and the deflection is not enough to allow the bellcrank and trip lever to clear the striker pin, the 1/16-inch aluminum rivet securing the two links is sheared. This permits the trip lever and bellcrank to be deflected farther downward, unrestricted by the limitations of the oxygen cylinder cable. The emergency oxygen can also be actuated manually. The manual actuating knob (2) provides for manual actuation of the oxygen cylinder in case of a malfunction in the normal oxygen system. Pulling the manual actuating knob deflects the bellcrank (24) downward, pulls the oxygen cylinder actuating cable, fracturing a breakoff nipple within the oxygen cylinder, and releasing the emergency oxygen supply.

j. Survival Kit Assembly. The rigid seat survival kit (RSSK) assembly consists of a rigid fiberglass case containing a survival kit. The case is opened by squeezing either of two release grips mounted in the sides. Three different survival kits are designed to fit into the survival kit case. The particular survival kit in use will depend on the nature of the mission. The three survival kits are: cold climate survival kit, hot climate survival kit, and overwater survival kit.

k. Ground Safety Lock Assembly. The ground safety lock assembly (flag) consists of six safety pins plus one positioning (bucket pin) clip. This assembly protects against inadvertent firing of the ejection seat.

WARNING

Never remove the safety pins of the ground safety lock assembly unless preparing the aircraft for a mission or performing authorized maintenance on components of the ejection seat requiring removal of safety pins.

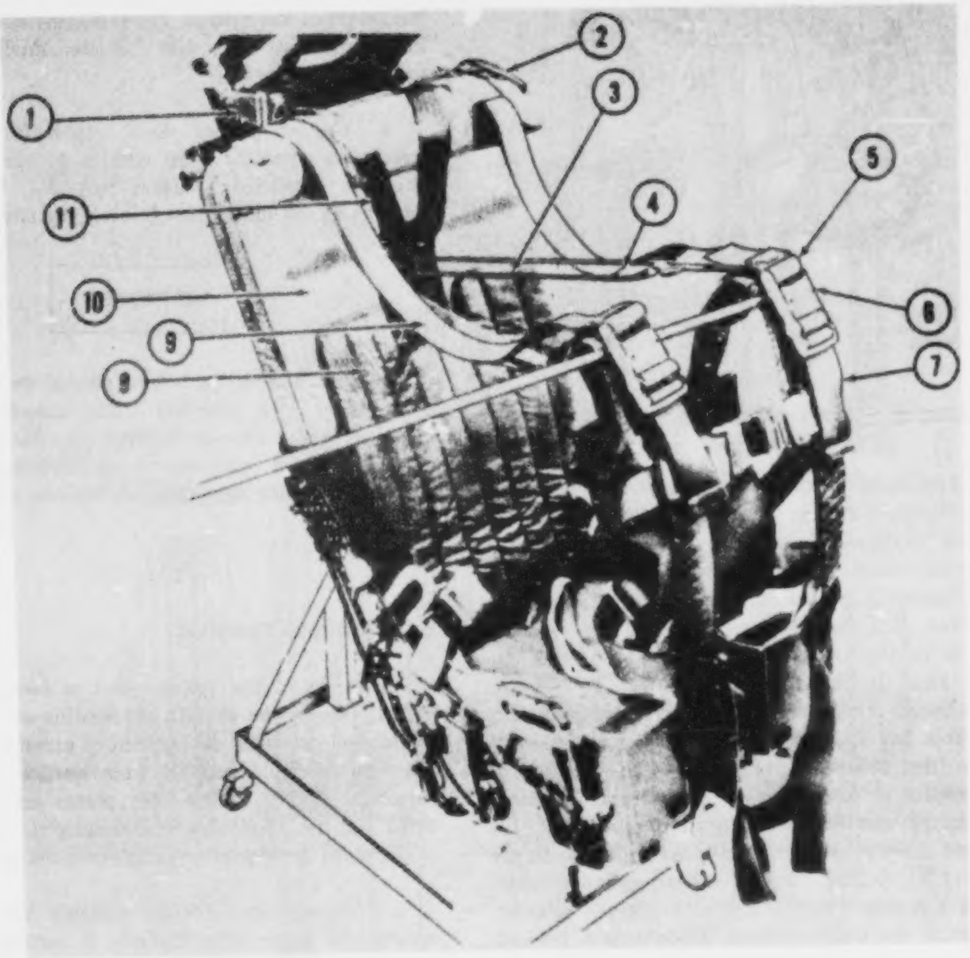
1-7. Theory of Operation.

Operation of the ejection seat is divided into four phases: clearing the aircraft, stabilization and deceleration of seat and occupant, deployment of personnel parachute, and separation of occupant from ejection seat for safe parachute descent. These four phases are described in detail in the following subparagraphs. In addition, operation of the manual override system is explained.

a. Clearing the Aircraft. Clearing the aircraft is depicted in figure 1-10. Ejection is initiated when the occupant pulls either the face blind handle (4, figure 1-2) or the lower firing handle (37). This action withdraws the primary firing pin sear from the firing mechanism in the ejection gun. Withdrawal of the sear allows firing pin to strike the primary cartridge. The heat and pressure from the primary cartridge ignites the lower and upper auxiliary cartridges, ejecting the seat and occupant. As the ejection seat moves upward, five separate events are initiated.

(1) The drogue gun sear is pulled from the drogue gun (26, figure 1-2) by the drogue gun trip rod (27) attached to the ejection gun crossbeam.

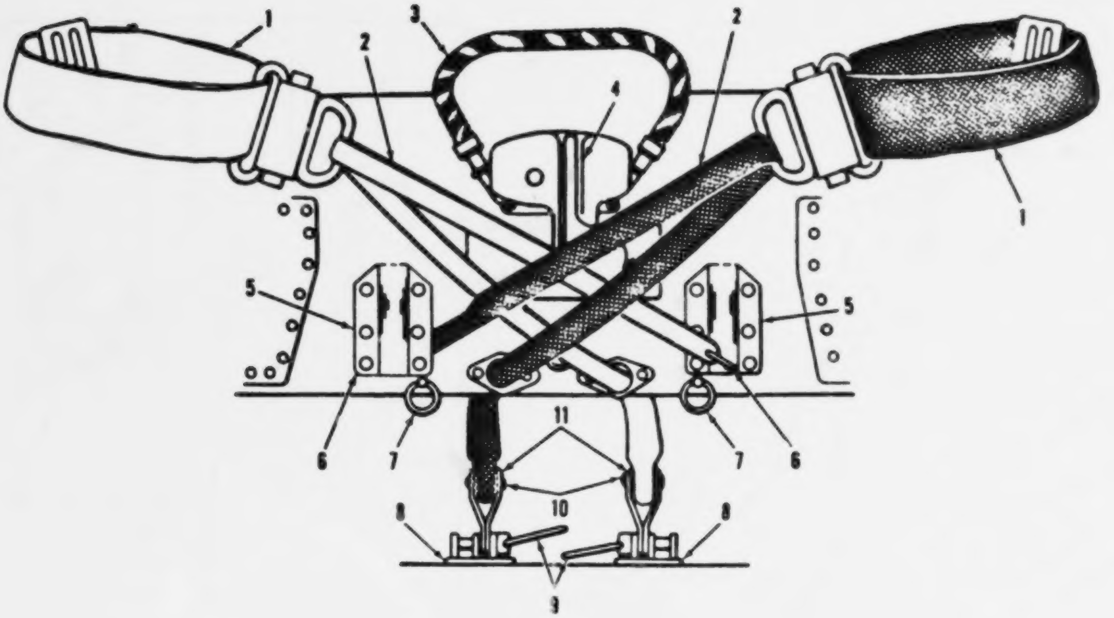
(2) The time release mechanism sear is pulled from the time release mechanism (20) by the time release mechanism trip rod (19) attached to the ejection gun crossbeam.



1. SHORT RESTRAINT STRAPS
2. PARACHUTE RIPCORD "D" RING
3. INERTIA REEL LOOP STRAP
4. ROLLER YOKES
5. RISER RELEASE FITTING
6. PARACHUTE RELEASE FITTINGS
7. HARNESS
8. LUMBAR BACK REST
9. PARACHUTE RISER
10. PERSONNEL PARACHUTE
11. LONG RESTRAINT STRAPS

10VJ5M-7

Figure 1-7. Harness assembly



1. QUICK-RELEASE GARTERS
2. LEG RESTRAINT CORD
3. LOWER FIRING HANDLE
4. LOWER FIRING HANDLE SAFETY GUARD
5. LEG RESTRAINT CORD LOCK
6. CORD LOCK FITTING
7. SNUBBER FINGER RING
8. FLIGHT COMPARTMENT FLOOR BRACKET
9. QUICK-RELEASE PINS
10. SHEAR RIVETS
11. ROLLER BRACKETS

10VJ5M-8

Figure 1-8. Leg restraint mechanism

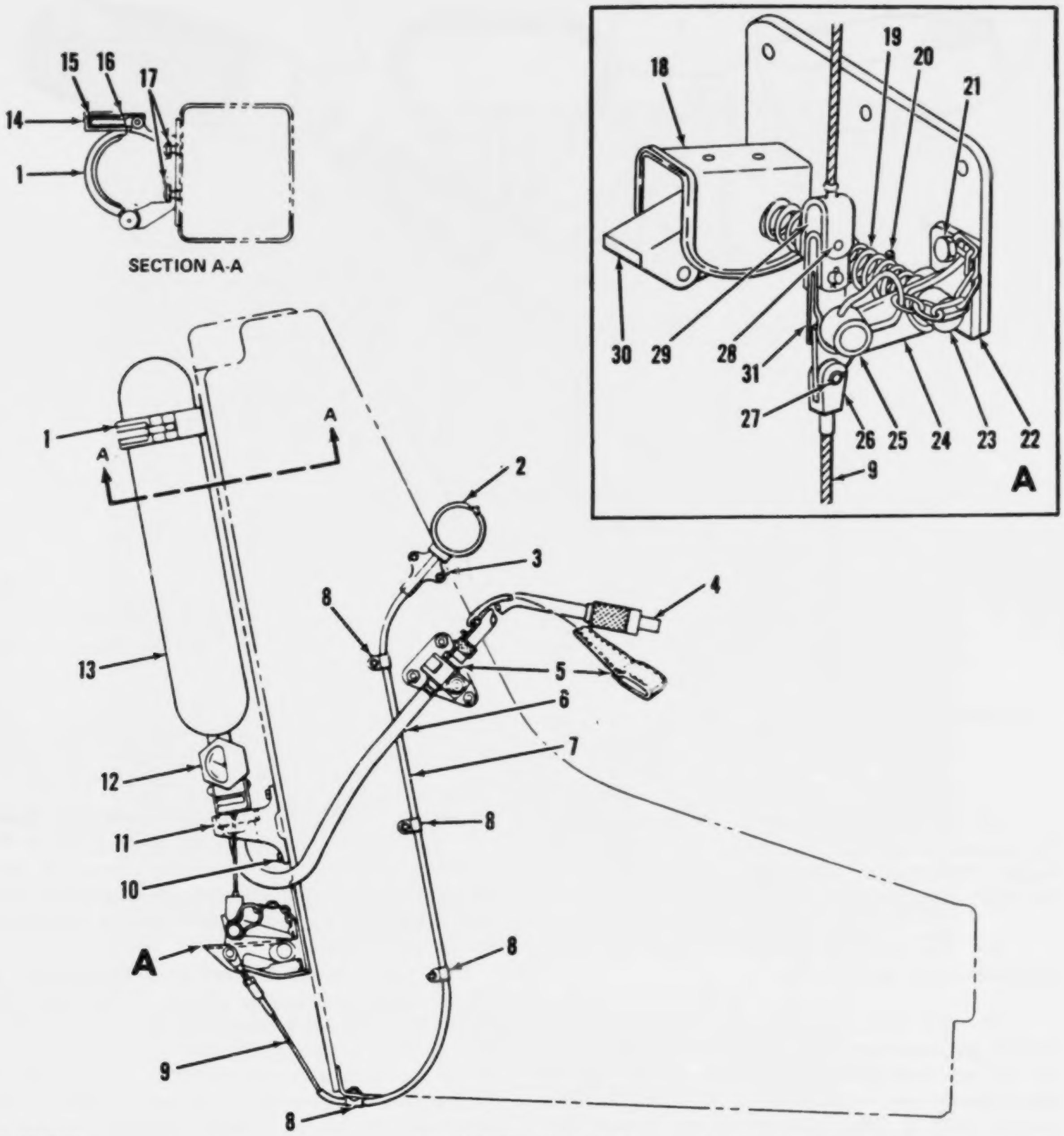
(3) Dual leg restraint cords (34) tighten, pulling the occupant's legs aft and together against the seat bucket (29) to prevent injury as the ejection seat leaves the flight compartment.

(4) The automatic emergency oxygen system is activated whether needed or not.

(5) The TCR initiator cable, attached to the ejection gun crossbeam, is deployed from its dispenser as the seat rises from the aircraft. When the ejection gun is approximately nine inches from full extension, the TCR initiator cable is fully extended. As the ejection seat continues to rise, the firing pin sear of the rocket motor initiator is withdrawn which activates the rocket motor. Thrust from the TCR positions the ejection seat in the correct attitude for rapid unrestricted deployment of the drogue parachute, and increases seat trajectory height.

b. Stabilization and Deceleration of Seat and Occupant. The seat is now clear of the aircraft with the occupant held securely in place by the loop straps and parachute harness assembly (figure 1-7), the lap belt and survival kit assembly, and leg restraint cords (2, figure 1-8). The TCR has positioned the ejection seat in the proper attitude for drogue parachute deployment. The drogue gun fires, forcibly extracting the drogue parachute. The drogue parachute inflates, stabilizing and decelerating the seat and occupant.

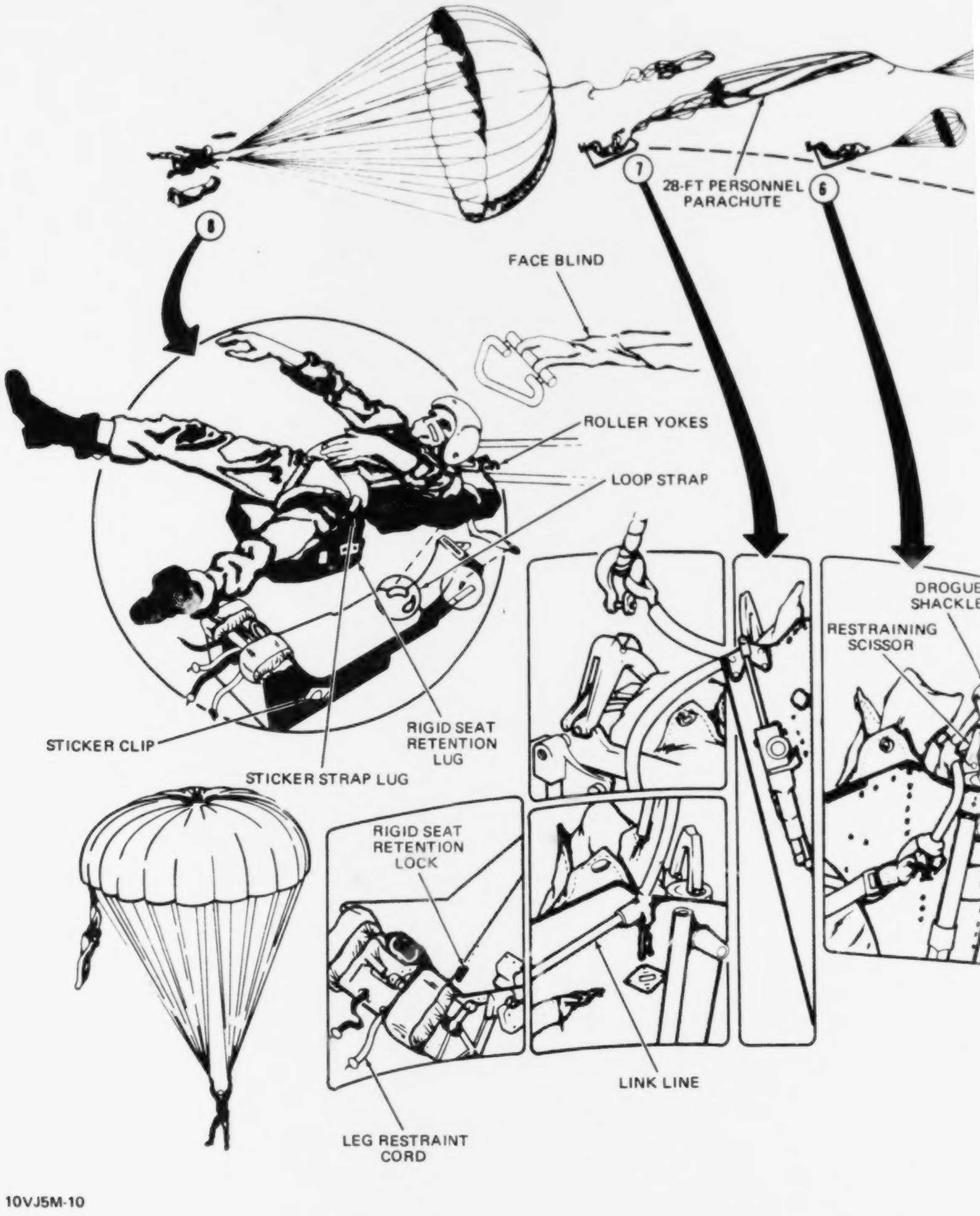
c. ***Deployment of Personnel Parachute.*** If the ejection took place above 15,000 feet, the barostat on the time release mechanism prohibits any further action until seat and occupant are below a pre-set altitude (14,000 to 15,000 feet). If the ejection occurred below the pre-set altitude, the automatic series of events continues. Approximately 1-3/4 seconds after the sear has been pulled from the time release mechanism (20, figure 1-2), the following events are initiated by mechanical linkage. The scissor, holding the drogue shackle to the ejection seat, opens, releasing the drogue parachute. The pull of the drogue parachute is then transmitted, through the link line, to the personnel parachute (6), extracting it from its pack for deployment. The long and short parachute restraint straps (21 and 22), holding the personnel parachute to the ejection seat, have also been released, enabling the personnel parachute to be extracted.



1. CLAMP
2. MANUAL ACTUATING KNOB
3. ACTUATING KNOB SUPPORT BRACKET
4. OXYGEN HOSE
5. OXYGEN QUICK-DISCONNECT BRIDLE AND LANYARD
6. OXYGEN HOSE
7. CABLE CONDUIT
8. CABLE CLAMP
9. CABLE
10. NUT, WASHER
11. OXYGEN CYLINDER SUPPORT BRACKET
12. PRESSURE GAGE
13. OXYGEN CYLINDER
14. ADJUSTING NUT
15. SPRING
16. EYEBOLT
17. SLOTTED NUT, WASHER
18. TRIP LEVER GUARD
19. SPRING
20. TAPER PIN
21. SLOTTED NUT, WASHER
22. BELLCRANK SUPPORT BRACKET
23. SHAFT
24. BELLCRANK
25. QUICK-RELEASE PIN
26. FLATHEAD PIN
27. COTTER PIN
28. SHEAR RIVET
29. CABLE LINK
30. TRIP LEVER
31. CONNECTING LINK

10VJ5M-9

Figure 1-9. Emergency oxygen system



8
7
28-FT PERSONNEL PARACHUTE
6
FACE BLIND
ROLLER YOKES
LOOP STRAP
DROGUE SHACKLE
RESTRAINING SCISSOR
STICKER CLIP
RIGID SEAT RETENTION LUG
STICKER STRAP LUG
RIGID SEAT RETENTION LOCK
LINK LINE
LEG RESTRAINT CORD

10VJ5M-10

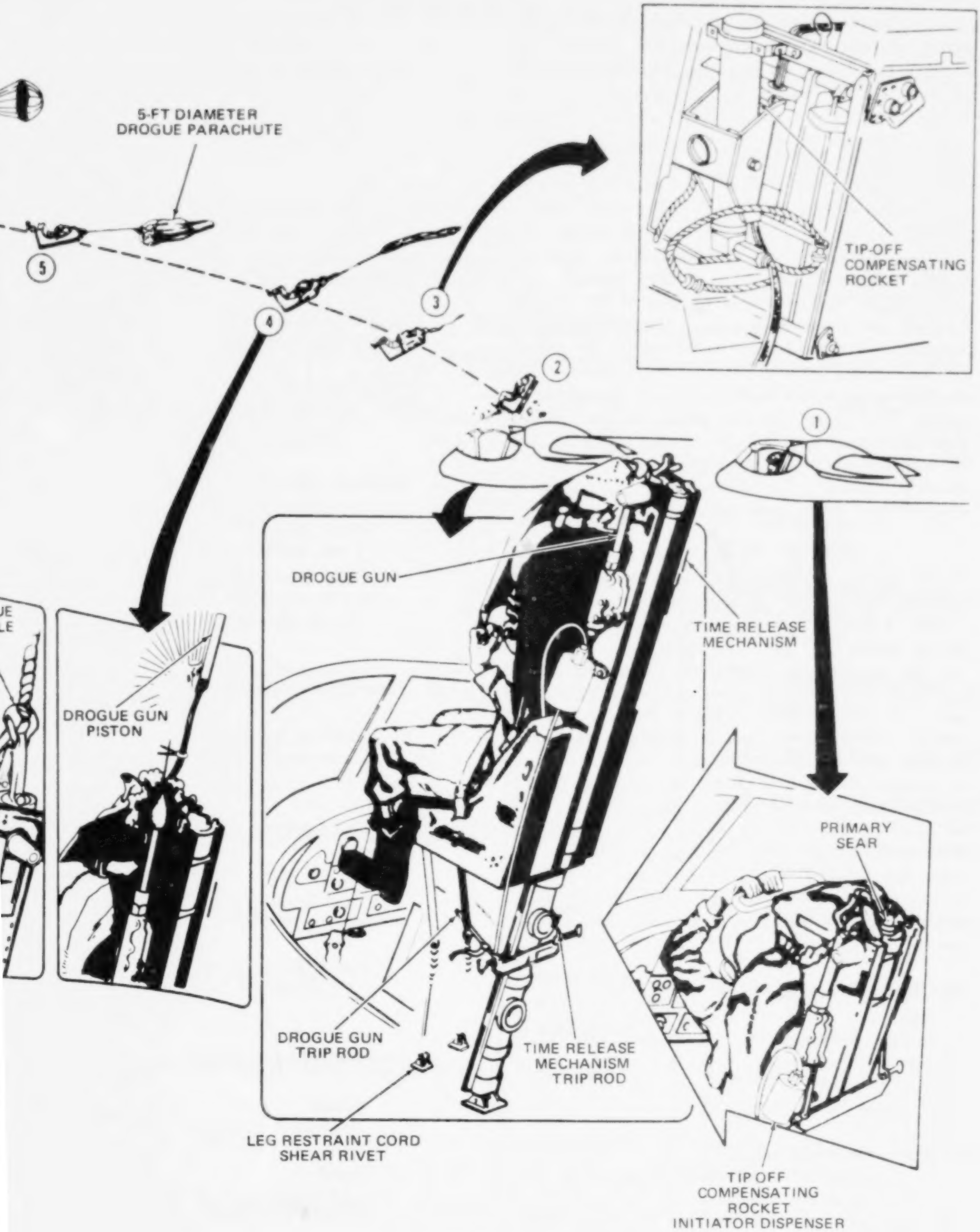

5-FT DIAMETER DROGUE PARACHUTE
⑤
④
③
②
①
TIP-OFF COMPENSATING ROCKET
UE
LE
DROGUE GUN PISTON
DROGUE GUN
TIME RELEASE MECHANISM
PRIMARY SEAR
DROGUE GUN TRIP ROD
TIME RELEASE MECHANISM TRIP ROD
LEG RESTRAINT CORD SHEAR RIVET
TIP OFF COMPENSATING ROCKET INITIATOR DISPENSER

Figure 1-10. Low level ejection sequence

Section III. TEST EQUIPMENT, SPECIAL TOOLS, AND MATERIALS

1-9. Test Equipment and Special Tools.

Table 1-1 provides a list of test equipment and special tools used to maintain the MK-J5D Ejection Seat.

1-10. Consumable Materials.

Table 1-2 lists consumable materials required for maintenance of the MK-J5D Ejection Seat.

1-11. Fabrication of Test Equipment, Special Tools, and Support Equipment.

Table 1-3 provides tabular data for fabrication of test equipment, special tools, and other support equipment.

Table 1-1. Special Tools and Test Equipment

Figure and Index No.	Nomenclature	Part No.	Function
	Alignment tool	105GT1024-59	Align ejection seat during removal and installation.
**	Barostat adapter assembly	105GT1030-23	Vacuum-test barostat on time release mechanism.
*	Belt insertion tool	105GT1043	Install harness loop strap lock fitting in inertial reel mechanism loop strap lock.
*	Cartridge extractor	GR506	Remove primary and auxiliary cartridges from ejection gun.
*	Cocking tool	MBEU/11038	Cocking tool for time release mechanism
*	Cocking tool	MBEU/4341	Cock drogue gun firing mechanism.
	Cradle, transportation, maintenance	105GT1040	Maintenance preparation, storage, and transporting seat.
	Crow foot wrench	AN8506-11 (modified)	Tighten drogue gun barrel to specified torque.
	Cutter, back spot	134XM15499 (or) TDO/742	Spotface slipper attachment holes.
	Ejection gun clamp mounting blocks	MBEU/8463	Protect ejection gun when supported in vise.
*	Extractor	105GT1046	Remove cartridge from drogue gun barrel.
*	Firing pin cocking tool	MBEU/1321	Cock ejection gun and guillotine firing mechanisms.

Table 1-1. Special Tools and Test Equipment – Continued

Figure and Index No.	Nomenclature	Part No.	Function
*	Firing pin protrusion tool	105GT1029	Measure firing pin protrusion of drogue gun and ejection gun firing mechanism.
	Handwheel	MBEU/26568	Withdraw indicating top latch plunger.
	Hoisting sling	105GT1024-33	Install and remove ejection seat from aircraft.
	Holding tool	105GT1027	Hold drogue gun and time release mechanism during maintenance.
	Leak test cap	212A31	Leak-test emergency oxygen cylinder.
***	Oxygen filling fixture	214A38	Service oxygen cylinder.
	Plunger retaining tool	4920-OV1-020	Retain top latch mechanism plunger.
	Pressure altimeter	MS28044L1A	Indicate altitude at which barostat initiates time release mechanism.
*	Screwdriver	105GT1044	Remove and install special slotted nuts in ejection seat.
*	Spanner wrench	MBEU/5787	Assemble piston top guide bushing.
	Spanner wrench	105GT1039	Remove and install barostat on time release mechanism.
*	Spanner wrench	128GT10155	Remove and install ejection gun firing mechanism and auxiliary cartridge breech caps.
	Special tool kit	134GT1048-T3	Maintain and service ejection seat.
**	Start switch assembly (drogue gun)	105GT1030-101	Perform operational check of drogue gun in conjunction with timing clock assembly.
* *	Stop switch assembly (drogue gun)	105GT1030-11	Perform operational check of drogue gun in conjunction with timing clock assembly.
	Streamer assembly	134SEME10035	Safety pin locking device for seat.
	Test unit	134GT1041-T5	Check mechanical timing mechanism of drogue gun and time release mechanism.
**	Timing clock assembly	134GT1041-35	Check timing mechanism of drogue gun and time release mechanism.

Table 1-1. Special Tools and Test Equipment — Continued

Figure and Index No.	Nomenclature	Part No.	Function
	Switch assembly	105GT1030-21	Check time release mechanism running time.
	Safety lock pin	134SEME10053	Guillotine sear ground maintenance.
	Safety lock pin	134SEME10054	TCR rocket initiator ground maintenance.
	Firing pin protrusion gage	J9126	Measure firing pin protrusion of guillotine firing mechanism.
	Vacuum pump	4310-900-8136	Operationally check barostat on time release mechanism.
	Vacuum Test Box	TDO 1153	Operationally check and adjust barostat on time release mechanism.
*	Wrench	WS1516	Remove drogue gun barrel from drogue gun.
*	Wrench	105GT1036	Remove and install harness strap retraction reel nut.
*	Wrench	105GT1037	Remove and install leg restraint lever retaining nuts.

*Included in Special Tool Kit, Part No. 134GT1048-T3
**Included in Test Unit, Part No. 134GT1041-T5
***Used on 51C3804 Filler Valve only

Table 1-2. Consumable Materials

Item No.	Nomenclature	Military Specification	Used For
1	Lockwire	MS20995C20	Safety wiring
2	Lubricating oil, general purpose	MIL-L-7870	General lubrication
3			
4	Tetrachloroethylene, technical	O-T-236	Cleaning
5	Grease, aircraft and instrument	MIL-G-23827	Lubrication
6	Drycleaning solvent	P-D-680	Cleaning
7	Oxygen, aviators', breathing, grade I	MIL-O-27210	Oxygen servicing
8	Grease, molybdenum disulfide	MIL-G-21164	Lubrication

Table 1-2. Consumable Materials — Continued

Item No.	Nomenclature	Military Specification	Used For
10	Lubricant, solid, film	MIL-L-23398	Lubrication
11	Nylon thread (No. 6 ticket)	FED V-T-295	Safe tie
12	Lubricating oil	MIL-L-83767	Vacuum pump
13	Leak test compound	MIL-L-25567	Leak-testing oxygen system
14	Locktight	MIL-S-22473	Dowel screw, safety

Table 1-3. Test Equipment, Special Tools and Support Equipment Fabrication Data

Figure and Index No.	Nomenclature	Function
1-11	Top latch plunger retaining tool	Retain top latch plunger during disassembly
1-12	Cartridge block	Store and ship spare cartridges.

NOTES:

1. TURN FROM OAK, BIRCH, OR HARD MAPLE PER COMMERCIAL STANDARD CS60-48, HARDWOOD DIMENSION LUMBER, GRADE CLEAR SQUARE.
2. APPLY TWO COATS ENAMEL MILITARY SPECIFICATION MIL-E-7729, COLOR NO. 509 RED PER ANA BULLETIN 166.

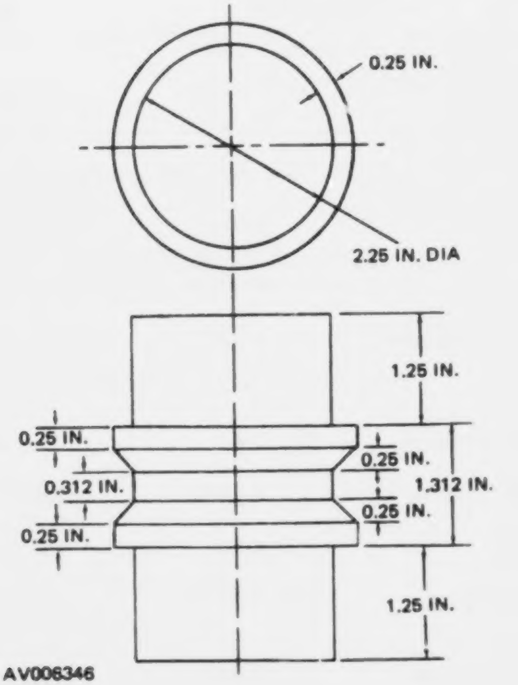


Figure 1-11. Top latch plunger retaining tool

INDEX NO.	NOMENCLATURE	MATERIAL
1	BOLTS (2)	NAS428-4-44
2	WING NUTS (2)	AN350-4
3	LID	5.50 x 0.75 PINE
4	NUTS (2)	AN315-4
5	WASHERS (2)	AN960-416L
6	CARD HOLDER	AN5800-1
7	BLOCK	5.50 x 3.50 PINE
8	SCREWS (8)	AN545-10-6
9	HINGE	MS20257C4-1000
10	DATA CARD	1.94 x 3 CARD
11	SCREWS (2)	AN550-2-3

NOTES

1. ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
2. LABEL HOLES IN CARTRIDGE BLOCK AS SHOWN USING BLACK MARKING PEN.
3. APPLY TWO COATS OF INSIGNIA RED ENAMEL (MIL-E-7729 TYPE 1, COLOR 509) TO OUTSIDE OF ASSEMBLED CARTRIDGE BLOCK.
4. STENCIL THE WORDS "DANGER EXPLOSIVES" ON TOP OF LID AND ON FRONT AND BACK SIDES OF BLOCK USING INSIGNIA WHITE ENAMEL (MIL-E-7729) COLOR 17875).

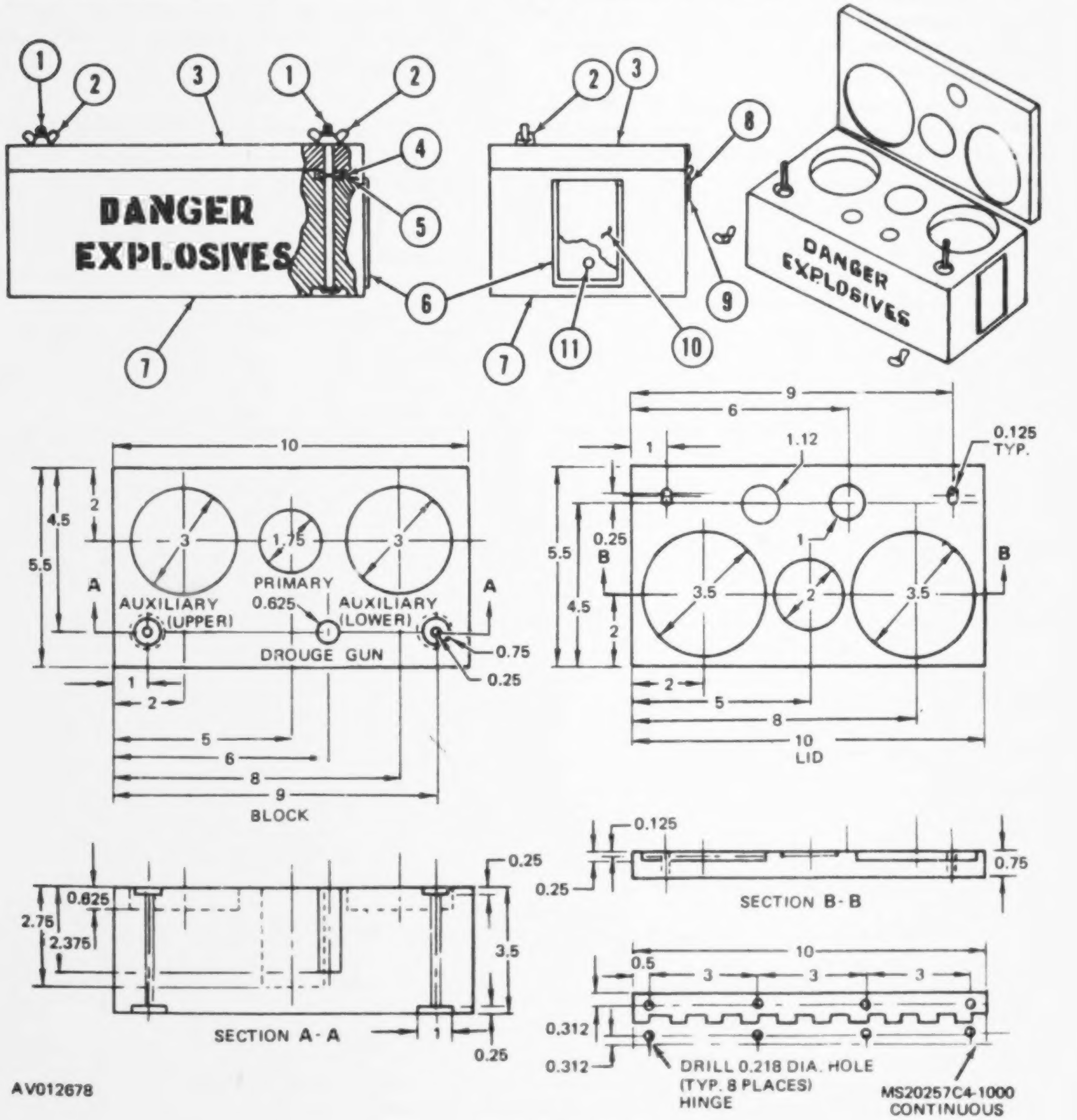


Figure 1-12. Cartridge block

1-12. In-Service Cartridge Storage.

Ejection seat cartridges may be stored in a designated area of the hangar or maintenance area approved by the local safety officer. The designated area must be free of battery charging fuses, large electric motors, flammables and/or open flame. The following provisions shall also apply:

a. A maximum of six ejection seats worth of cartridges may be stored at any one time.

b. Ejection seat cartridge sets shall be packaged in the cartridge block depicted in figure 1-12. A 50 caliber ammunition container similarly configured may also be used.

c. A metal container constructed of 1/8 inch thick mild steel sheet, with welded joints, hinged lid and hasp for locking is an approved storage container. Six each 1/4 inch vent holes shall be drilled through each end to facilitate ventilation.

d. The container should measure 29 inches long, 18 inches wide and 10 inches deep. These minimum measurements will accomodate the cartridge blocks and one rocket motor shipping container.

e. The storage container shall be painted insignia red (MIL-E-7729) with the words "CAUTION EXPLOSIVES CONTAINED INSIDE" painted in white insignia enamel (MIL-E-7729). It shall be secured to the floor in an area free of traffic.

f. A key lock with two sets of keys, one retained by the ejection seat lead man (NCOIC) and the other by the Maintenance Officer, shall be utilized for controlled access to the explosives.

NOTE

M119 rocket motors are not normally removed from the ejection seat except for replacement actions. Therefore, not more than two motors packed in original crate, shall be stored in this locker during unscheduled maintenance periods.

CHAPTER 2

GENERAL SYSTEM DESCRIPTION

2-1. General.

This chapter provides a description of the operating controls, their use, and location. Both normal and emergency operating procedures are described. Data is provided describing the use of the emergency oxygen supply and the use of components of the survival kit.

2-2. Operating Controls.

Table 2-1 provides a list of operating controls and their functions. Figure 2-1 depicts the locations of the operating controls.

2-3. Normal Operating Procedures.

Normal operating procedures for the ejection seat can be divided into two categories: ejection procedures, and procedures not involving ejection.

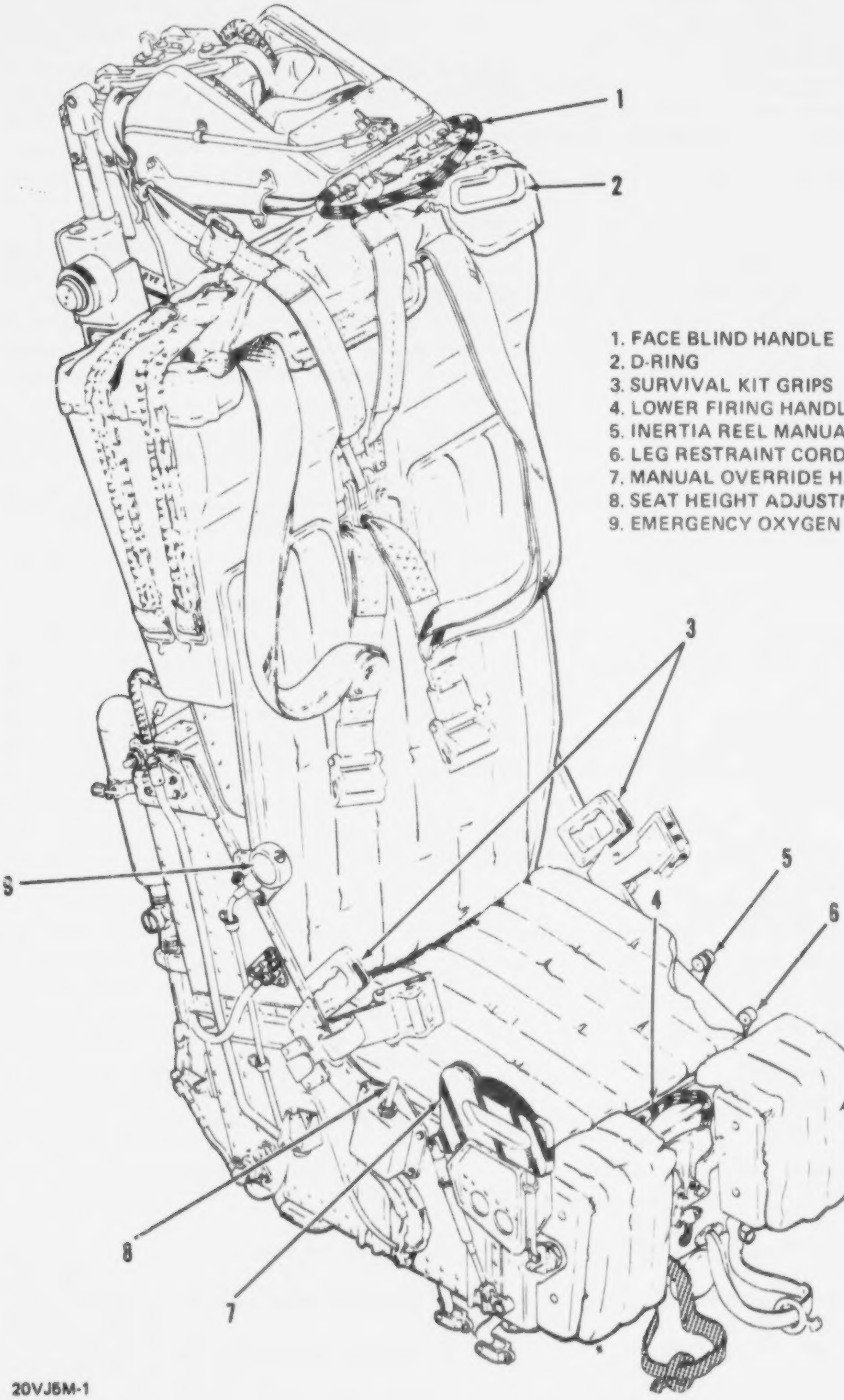
a. Normal Ejection Procedures. Either one of two pull handles, the face blind (or upper firing handle) (1, figure 2-1), or the lower firing handle (4) when pulled, will begin a normal ejection and automatic separation from the ejection seat. Pulling down on the face blind handle with both hands will provide a face cover and, at the same time, fire the ejection gun. The lower firing handle is used for ejection in event the face blind handle is inaccessible because of abnormal flight conditions or for any other reason.

b. Normal Procedures Not Involving Ejection.

(1) *Inertia reel manual control handle.* The inertia reel manual control handle (5, figure 2-1) is a three-position lever which is connected to and controls the operation of the inertia reel mechanism. The mechanism consists of a spring-loaded strap retention reel, loop straps, snubbers, and a harness lock. When the three-position handle is in the forward or locked position, forward movement is prevented by snubbers, and any slack is taken up by the reel, keeping the harness loop strap taut. When the handle is cycled through the aft position, the snubbers unlock and the handle is

Table 2-1. Operating Controls

Figure 2-1 Index No.	Nomenclature	Function
1	Face blind handle	Initiate ejection sequence.
2	D-Ring	Release personnel parachute for deployment.
3	Survival kit grips	Open survival kit rigid container.
4	Lower firing handle	Initiate ejection sequence.
5	Inertia reel manual control handle	Release or locks inertia reel system loop strap.
6	Leg restraint cord lock release handle	Release leg restraint cords.
7	Manual override handle	Emergency release from ejection system.
8	Seat height adjustment switch	Raise and lowers seat bucket.
9	Emergency oxygen manual control knob	Manually actuate the oxygen cylinder.



1. FACE BLIND HANDLE
2. D-RING
3. SURVIVAL KIT GRIPS
4. LOWER FIRING HANDLE
5. INERTIA REEL MANUAL CONTROL HANDLE
6. LEG RESTRAINT CORD LOCK RELEASE HANDLE
7. MANUAL OVERRIDE HANDLE
8. SEAT HEIGHT ADJUSTMENT SWITCH
9. EMERGENCY OXYGEN MANUAL CONTROL KNOB

20VJ5M-1

Figure 2-1. Operating controls

spring-loaded to the auto lock position. In the auto lock position, the loop straps may be extended, allowing the occupant to move forward and will lock when subjected to 2 to 3 g.

(2) *Leg restraint cord lock release handle (6, figure 2-1).* The leg restraint cord lock release handle is a two-position lever, spring-loaded to the aft position. Placing the handle in the forward position releases the upper end of the leg restraint cords.

(3) *Leg restraint cord snubber finger rings (7, figure 1-8).* The leg restraint cord snubber finger rings, when pulled, allow the occupant to pull the leg restraint cords forward to provide sufficient comfortable leg movement.

(4) *Seat height adjustment switch (8, figure 2-1).*

CAUTION

Do not operate the seat raising actuator more than 1 minute (maximum) during any 8-minute period of time. Extended operation will shorten the seat raising actuator service life.

When the seat height adjustment switch is pushed forward, it lowers the ejection seat by activating the seat actuating jack mechanism. When the seat height adjustment switch is pulled aft, the ejection seat is raised. The switch is spring-loaded and will return to the center (neutral) position when released. The total vertical travel capability of the MK-J5D Ejection Seat is 4.7 inches. A white EYE LEVEL line is painted on the side of the ejection seat to guide the occupant while correcting seat height adjustment.

2-4. Emergency Operating Procedure.

If the automatic ejection system of the MK-J5D Ejection Seat fails, there are provisions for bypassing the automatic functions. These provisions involve the use of two controls; the manual override handle (7, figure 2-1), and the D-ring (2).

a. Manual Override Handle (7, Figure 2-1). The manual override handle is used to bypass the automatic ejection functions of the drogue gun, the drogue parachute, or the time release mechanism. To use the manual override handle, the trigger and handgrip must be squeezed and the handle pulled up and aft. This results in the following actions:

(1) The face blind handle and the lower firing handle are locked in position to prevent accidental firing of the ejection gun if it had not been fired.

(2) The leg restraint cords and seat retention system are released, freeing occupant from ejection seat.

(3) A cartridge is fired, causing the guillotine to sever the drogue parachute from the personnel parachute.

b. D-Ring (2, Figure 2-1). After the occupant is free of the ejection seat, he pulls the D-ring which deploys the personnel parachute.

2-5. Use of Oxygen Supply and Survival Kit.

Operation of the oxygen supply system and the survival kit involves use of the emergency oxygen manual control (9, figure 2-1) and the survival kit grips (3).

a. Emergency Oxygen Manual Control. The emergency oxygen manual control provides for manual actuation of the emergency oxygen system in case of malfunction in the aircraft (normal) oxygen system. When the emergency control (ball) is pulled outward, it pulls the oxygen cylinder actuating cable, fractures a breakoff nipple within the oxygen cylinder, and releases the oxygen.

b. Rigid Seat Survival Kit. A successful ejection ends with the occupant performing a normal parachute descent supported by his 28-foot personnel parachute. Attached to the parachute harness and providing a seat for the occupant during his parachute descent, is a fiberglass case containing a survival kit. To open the fiberglass case and release the survival kit, occupant must squeeze and pull either survival kit grip (3, figure 2-1). For contents of survival kit container, refer to TM 55-8645-206-23.

CHAPTER 3

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. PREPARATION FOR MAINTENANCE, STORAGE, AND RESHIPMENT.

(Not applicable)

Section II. INSTALLATION.

(Not applicable)

Section III. INSPECTION AND SERVICING.

3-1. General.

The following paragraphs provide inspection, servicing and maintenance procedures authorized for organizational maintenance by the Maintenance Allocation Chart for the MK-J5D Ejection Seat.

3-2. Inspection Requirements.

The types of inspection to be performed are as follows:

a. *Daily Inspection.* Perform daily inspection to verify serviceability of the ejection seat in accordance with TM 55-1510-217-PMD.

b. *Intermediate Inspection.* Accomplish scheduled intermediate inspection of the ejection seat in accordance with TM 55-1510-217-PM.

c. *Periodic Inspection.* The scheduled periodic inspection of the ejection seat shall be accomplished in accordance with TM 55-1510-217-PM.

d. *Special Inspections.* The special inspections listed as follows shall be performed in accordance with the applicable specified time interval and in accordance with the procedures contained in this technical manual.

(1) *Thirty day inspection.* The thirty day inspection will be performed by organizational maintenance as outlined in paragraph 3-3.

(2) *One-hundred eighty day inspection.* The one-hundred eighty day inspection shall be accomplished at direct support or general support maintenance level. (Refer to paragraph 4-6.)

WARNING

Personnel parachute pack utilizing plastic suspension time stowage tray shall require ejection seat to be inspected at 90 day interval.

(3) *One year requirements.* The one year requirements shall be accomplished at direct support or general support maintenance level. (Refer to paragraph 4-7.)

(4) *Three year requirements.* The three year requirements shall be accomplished at direct support or general support maintenance level. (Refer to paragraph 4-8.)

(5) *Four year requirements.* The four year requirements shall be accomplished at direct support or general support maintenance level. (Refer to paragraph 4-9.)

(6) *Five year requirements.* The five year requirements shall be accomplished at direct support or general support maintenance level. (Refer to paragraph 4-10.)

(7) *Six year requirements.* The six year requirements shall be accomplished at direct support or general support maintenance level. (Refer to paragraph 4-11.)

(8) *Seven year requirements.* The seven year requirements shall be accomplished at AVIM maintenance level. (Refer to paragraph 4-12.)

(9) *Eight year requirements.* The eight year requirements shall be accomplished at AVIM maintenance level (Refer to paragraph 4-12.1).

(10) *Ten year requirements.* The ten year requirements shall be accomplished at AVIM maintenance level (Refer to Paragraph 4-12.2).

(11) *Twelve year requirements.* The twelve year requirements shall be accomplished at AVIM maintenance level (Refer to Paragraph 4-12.3).

3-3. Thirty Day Inspection.

This inspection shall be performed by qualified personnel as outlined in table 3-1.

NOTE

Upon completion of the following inspection, the date, inspector's name, and unit will be entered on DA Form 3912 located on the righthand side of the personnel parachute pack and the flap on top of the drogue pack.

Table 3-1. Thirty Day Inspection Requirements

Item	Major Assembly, Item, or Area	Requirement
Lines	Drogue line and link line	Inspect for condition and security of installation.
Safety tie	Drogue shackle safety tie and drogue flap securing pin safety tie	Inspect for security of installation and proper attachment.
Restraint	Personnel parachute pack	Unbuckle personnel parachute restraint strap on each side of head box.
Locking pins and cones	Personnel parachute pack	First remove parachute withdrawal line from guillotine and then pull top of personnel parachute forward approximately 3 inches. Open top outer and inner flaps exposing locking pins and cones. Check for proper engagement, corrosion and damage to locking pins and condition of parachute withdrawal line.
Safety tie	Personnel parachute pack	Ensure that safety tie is intact.
Flaps and covers	Personnel parachute pack	Check condition of covers and secure top inner and outer flaps.
Restraint straps	Personnel parachute pack	Move parachute aft on support, flush with seat back. Inspect parachute restraint straps for condition and security. If restraint straps are free of defects, reinstall strap on each side of head box. Install parachute withdrawal line into guillotine with the excess line positioned to the rear of the guillotine.

Table 3-1. Thirty Day Inspection Requirements (Cont)

Item	Major Assembly, Item, or Area	Requirement
Risers	Personnel parachute	Inspect personnel parachute risers for cuts, frayed stitching, and discoloration from exposure to sunlight.
D-ring	Personnel parachute	Check parachute ripcord handle (D-ring) for retention to clip on left side of parachute pack.
Release fittings	Personnel parachute	Check riser release fittings for ease of operation and positive locking. There shall be no binding or hangup during opening and closing. **NOTE** If any doubt of the serviceability of the items listed in this table exists, a qualified parachute rigger should be consulted.

3-4. Servicing.

The application of recommended lubricants to their relevant bearing surfaces, together with the observance of absolute cleanliness, will ensure the maximum efficiency and utmost service of the ejection seat and the components thereof.

a. *Lubrication Frequencies.* Lubrication frequencies are limited to the intervals specified herein, except where conditions warrant their change.

b. Lubrication Precautions and Procedures. Lubrication precautions and procedures outlined in this technical manual will be strictly complied with at all times. No alternate lubricant shall be applied to the ejection seat unless specifically outlined herein.

c. Lubrication Requirements. Each part of the ejection seat or any component thereof, as depicted in figure 3-5, is indicated by a frequency symbol which shows the time interval between lubrications. Application symbols within the frequency symbol show how the lubricant is applied. A parts nomenclature key, referred to by a number adjacent to the frequency symbol, identifies the part to be lubricated. A code of either one, two, or three letters within the frequency symbol identifies the type of lubricant. Parts or areas to be lubricated on both sides of the ejection seat are indicated by broken leader lines. If a part is to be lubricated in more than one place, the number of places is indicated in parentheses along the leader line. All symbols and codes are explained in figure 3-5.

Section IV. PREVENTIVE MAINTENANCE

3-5. Introduction.

Periodic performance of the preventive maintenance detailed herein will ensure maximum efficiency and reliability of the MK-J5D Ejection Seat and its components.

3-6. Cleaning.

Cleaning of the ejection seat and the ejection seat components by organization maintenance is to be accomplished as such conditions warrant. Only the components outlined in following subparagraphs *a* through *d* should be cleaned, using the prescribed materials and procedures. Never attempt to perform cleaning on any unauthorized area or component.

WARNING

Before attempting to service the ejection seat or ejection seat components with ejection seat installed in the aircraft, ensure that ground safety locks are installed.

a. *Harness Assembly.*

(1) Clean harness assembly using a solution of warm water and a synthetic detergent (hand-dishwashing compound). Dissolve one to four ounces of detergent in one gallon of water and scrub harness lightly with a soft-bristled brush.

(2) Rinse harness assembly by applying clear water, as sparingly as possible, to remove detergent solution.

(3) Allow harness assembly to dry thoroughly.

WARNING

Do not dry harness assembly in direct sunlight, as sunlight causes harness deterioration which may result in separation of occupant from personnel parachute after ejection.

b. *Loop Strap.*

(1) Position inertia reel manual control handle to unlock (aft) position and pull loop strap out to the fully extended position and hold loop strap.

(2) Spot-clean soiled areas with a soft-bristled brush or clean cloth dampened with tetrachloroethylene (item 4, table 1-2).

(3) Rinse spot-cleaned area with tetrachloroethylene (item 4, table 1-2).

c. Seat Cushion, Back Rest Cushion and Floating Lap Belt.

(1) Clean soiled seat cushions and lap belts with a solution of warm water and a synthetic detergent (hand-dishwashing compound). Dissolve one to four ounces of detergent in one gallon of water and scrub cushions lightly, using a soft-bristled brush or a clean cloth.

(2) Remove detergent solution with a clean cloth dampened in clear water.

NOTE

Seat and back rest cushions may be lifted out for improved accessibility.

d. Leg Restraint Cords and Quick-Release Garters.

(1) Hold snubber finger rings out and pull leg restraint cord out as far as possible. Remove quick-release garters from leg restraint cords.

(2) Clean leg restraint cords quick-release garters in same manner as prescribed for harness assembly. (Refer to preceding subparagraph *a*.)

(3) Install quick-release garters on leg restraint cords.

3-7. Lubrication.

For lubrication instructions, refer to paragraph 3-4.

3-8. Extreme Environmental Maintenance.

No special instructions or special maintenance is required for extreme environmental conditions.

Section V. OPERATIONAL CHECKOUT

3-9. General.

Operational requirements and procedures for verifying serviceability of the operating controls and linkages, as applicable to organizational maintenance, shall be performed on the ejection seat and components as conditions warrant. These components include the face blind locking mechanism, dual leg restraint mechanism, inertia reel manual control, and the seat actuating jack mechanism.

3-10. Operational Checks.

The following operational checks are authorized for organizational maintenance.

a. Face Blind Locking Mechanism.

(1) Remove safety pin of ground safety lock from face blind locking mechanism (3, figure 1-2).

(2) With the safety lock of face blind locking mechanism in up (locked) position, the locking plunger must engage the face blind handle body (visual).

(3) With the safety lock of the face blind locking mechanism in the down (unlocked) position, the locking plunger must be clear of the face blind handle body (visual).

WARNING

Do not pull face blind.

(4) Install safety pin of ground safety lock in the face blind locking mechanism.

b. Leg Restraint Mechanism.

(1) Ensure leg restraint cord lock release handle (33, figure 1-2) is in forward (locked) position.

(2) Pull on lower end (under seat bucket) of leg restraint cord (2, figure 1-8) and ensure it passes through snubber freely.

(3) Pull forward on leg restraint cord and ensure that line is held by snubber.

(4) Pull forward on leg restraint cord and pull on snubber finger ring (7). Ensure leg restraint cord will pull out freely while snubber finger ring is held out.

NOTE

The snubber finger ring is spring-loaded and will return to the locked position when released.

(5) Insert cord lock fitting (6) on upper end of leg restraint cord (2) into leg restraint cord lock (5) in front of seat bucket. Ensure cord lock fitting is secure.

(6) Move leg restraint cord lock release handle (33, figure 1-2) to its aft (unlocked) position and ensure that upper end of leg restraint cord (2, figure 1-8) is released. Leg restraint cord lock release handle should move freely without binding.

(7) Ensure leg restraint cord lock release handle (33, figure 1-2) returns to its forward (locked) position.

(8) Perform preceding steps (1) through (7) on opposite leg restraint cord (2, figure 1-8) and cord lock fitting (6).

c. *Inertia Reel Manual Control.*

(1) Place inertia reel manual control handle (32, figure 1-2) in center (autolock) position.

(2) Pull loop strap out to extreme position.

(3) Move inertia reel manual control handle to forward (locked) position.

(4) Slowly allow loop strap to retract a few inches at a time; then pull forward on loop strap to see if loop strap locks.

(5) Repeat procedure in preceding step (4) until loop strap is fully retracted.

(6) Move inertia reel manual control handle to center (autolock) position and pull on loop strap. Loop strap should be locked.

(7) Move inertia reel manual control handle to aft (unlocked) position and release handle. Handle should move to center (autolock) position.

NOTE

The inertia reel manual control handle is spring-loaded to the center (autolock) position.

(8) Pull loop strap out to the fully extended position and slowly release loop strap. Loop strap should completely retract.

d. *Seat Actuating Jack Mechanism.*

(1) Ensure all switches are off.

(2) Connect external power to aircraft in accordance with TM 55-1510-204-23 or TM 55-1510-213-23.

(3) Check that ejection seat moves up when seat height adjustment switch (2, figure 3-6) is pushed aft, and stops when switch is released.

CAUTION

Do not operate the seat raising actuator more than 1 minute (maximum) during any 8-minute period of time. Extended operation will shorten the seat raising actuator service life.

(4) Check that ejection seat moves down when seat height adjustment switch is pushed forward, and stops when switch is released.

(5) Check that ejection seat actuating jack stops when full down position is reached.

(6) Remove external power from aircraft in accordance with TM 55-1510-204-23 or TM 55-1510-213-23.

3-11. Troubleshooting Data.

Troubleshooting is the systematic isolation of defective or inoperative components or systems by means of analysis of trouble symptoms, checking to determine the component(s) or system at fault, and the application of the corrective action. Troubles which may be encountered during operation or checkout of the ejection seat are listed in table 3-2. Probable causes and corrective actions are listed opposite each indication of trouble. Careful study of this table will give a general knowledge of difficulties which may be encountered at organizational maintenance level, a quick, easy method to analyze the probable cause, and the corrective action to be taken. Before condemning a component or system, a thorough check should be made to determine if failure is due to another component or system operating in conjunction with the component or system assumed to be faulty.

Table 3-2. Troubleshooting, Organizational Maintenance

Malfunction	Probable Cause	Corrective Action
1. Seat height adjustment switch inoperative.	a. Monitored dc bus not energized.	a. Apply external power. (Refer to TM 55-1510-204-23 or TM 55-1510-213-23.)
	b. Low or no power supply.	b. Check for proper source of supply (minimum 20 amperes).
	c. Foreign object blocking normal movement of seat.	c. Remove foreign object.
	d. Electrical lead to seat height adjustment mechanism defective.	d. Notify Direct Support maintenance.
2. Leg restraint cords do not lock when pulled in restraining position.	a. Leg restraint cords twisted.	a. Straighten leg restraint cords.
	b. Snubber mechanism jammed or defective.	b. Notify Direct Support maintenance.
3. Leg restraint cords will not unlock when leg restraint cord lock release handle is positioned to aft (unlocked) position.	a. Locking mechanism jammed in locked position.	a. Notify Direct Support maintenance.
	b. Snubber jammed in locked position.	b. Notify Direct Support maintenance.
4. Harness loop strap will not lock.	a. Dirt or obstruction in snubber mechanism.	a. Notify Direct Support maintenance.
	b. Maladjusted linkage.	b. Notify Direct Support maintenance.

3-12. Adjustment and Alignment.

Adjustment and alignment procedures are not applicable to organizational level of maintenance.

Section VI. REPAIR AND REPLACEMENT OF AUTHORIZED PARTS

3-13. Introduction.

Prescribed inspections detailed herein will ensure maximum efficiency of the MK-J5D Ejection Seat.

3-14. Ground Safety Lock.

Ground safety lock inspection. The ground safety lock (figure 3-1) consists of safety pins and one positioning (bucket pin) clip. The safety pins provide protection against the inadvertent firing of any charges in the ejection seat.

WARNING

Never remove the safety pins of the ground safety lock assembly unless preparing the aircraft for a mission or performing authorized maintenance on components of the ejection seat requiring removal of safety pins.

a. Removal. Remove quick-release type safety pins and bucket pin from ejection seat as follows.

(1) Lower firing handle (Detail E)

(2) Manual override handle (Detail F)

(3) Bucket pin (Detail G)

(4) TCR cable dispenser (Detail D)

(5) Drogue gun (Detail C)

(6) Face blind locking mechanism (Detail B)

(7) Ejection gun firing pin sear (Detail A)

b. Inspection.

(1) Inspect quick-release type safety pins for security of attachment to ground safety lock (flag).

(2) Inspect safety pins for corrosion and for ease of operation.

c. Installation.

(1) Remove ground safety lock from storage area in aircraft.

(2) Install quick-release type safety pins and bucket seat pin at locations shown in figure 3-1 in reverse order of removal.

3-15. Face Blind Locking Mechanism.

Face blind locking mechanism inspection. The face blind locking mechanism (3, figure 1-2) is located on top of the headbox. It prevents accidental extraction of the face blind by locking the face blind handle (4) in its proper position. The face blind locking mechanism is in the unlocked position when the safety lock is down and is in the locked position when the safety lock is up.

a. Ensure safety lock will lock and unlock easily without binding.

b. Ensure safety pin lock is not malformed and will accept the safety pin of ground safety lock when in locked position.

3-16. Top Latch Mechanism and Trip Rods.

Top latch mechanism and trip rod inspection. The top latch mechanism locks the seat structure to the ejection gun so that the ejection seat is held firmly in the aircraft until ejection occurs. The top latch mechanism is installed in the top of the left vertical main beam. Inspect the top latch mechanism as follows:

a. Ensure indicating dowel pin is flush with plunger face. (See figure 3-2.)

b. Ensure plunger face is flush with edge of plunger housing.

c. Visually check to ensure drogue gun/TCR initiator cable assembly and time release mechanism trip rod (figure 3-3) indicating collars are flush with, or not more than 1/2-inch maximum away from, edge of trip rod outer barrel when connected to crossbeam.

d. If the top latch mechanism and indicating trip rod collars do not meet the above requirements indicating an improperly installed ejection seat, notify Direct Support level of maintenance.

3-17. Harness and Lap Belt.

Harness assembly and floating lap belt inspection. The harness assembly (figure 1-7) and the floating lap belt provide a means of attaching the occupant to the ejection

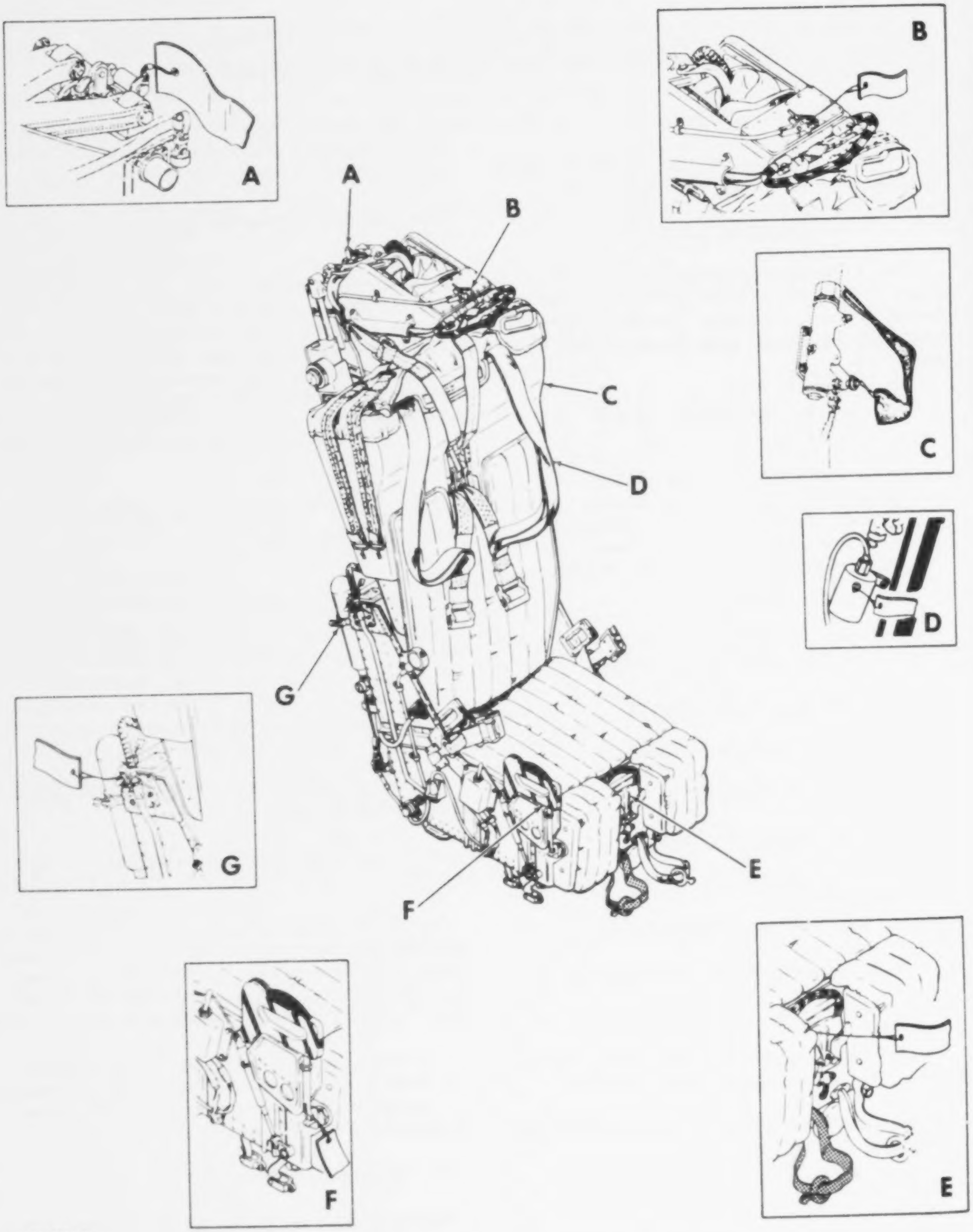
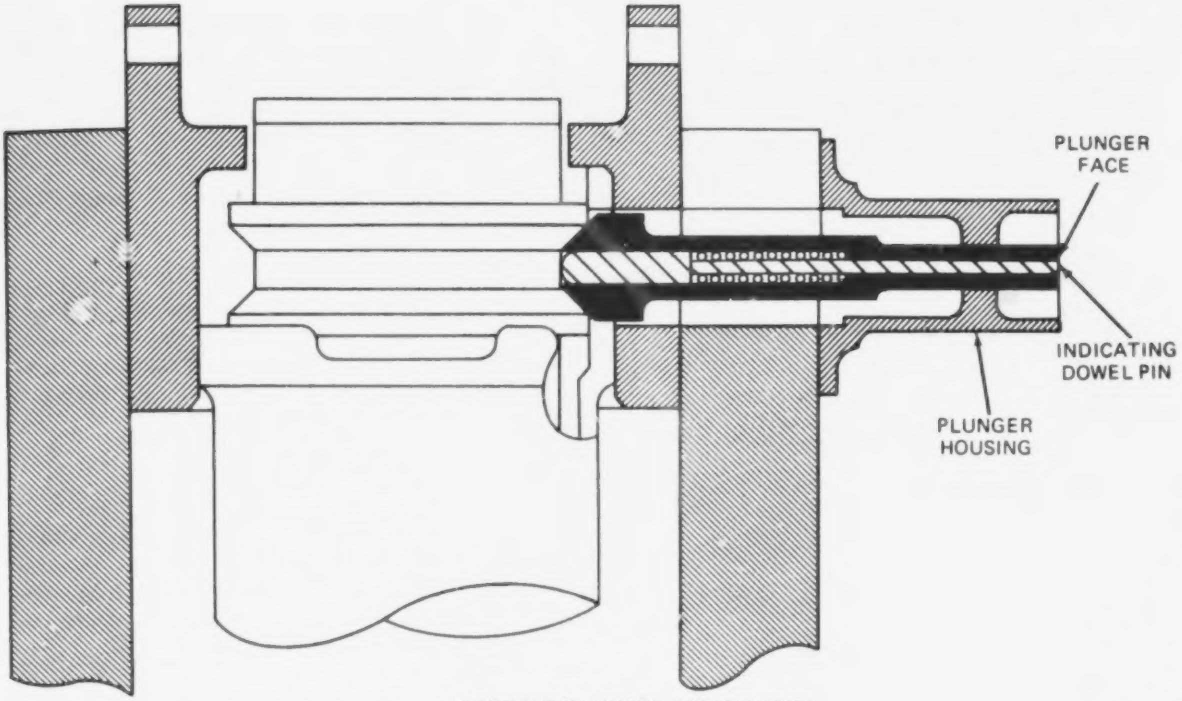
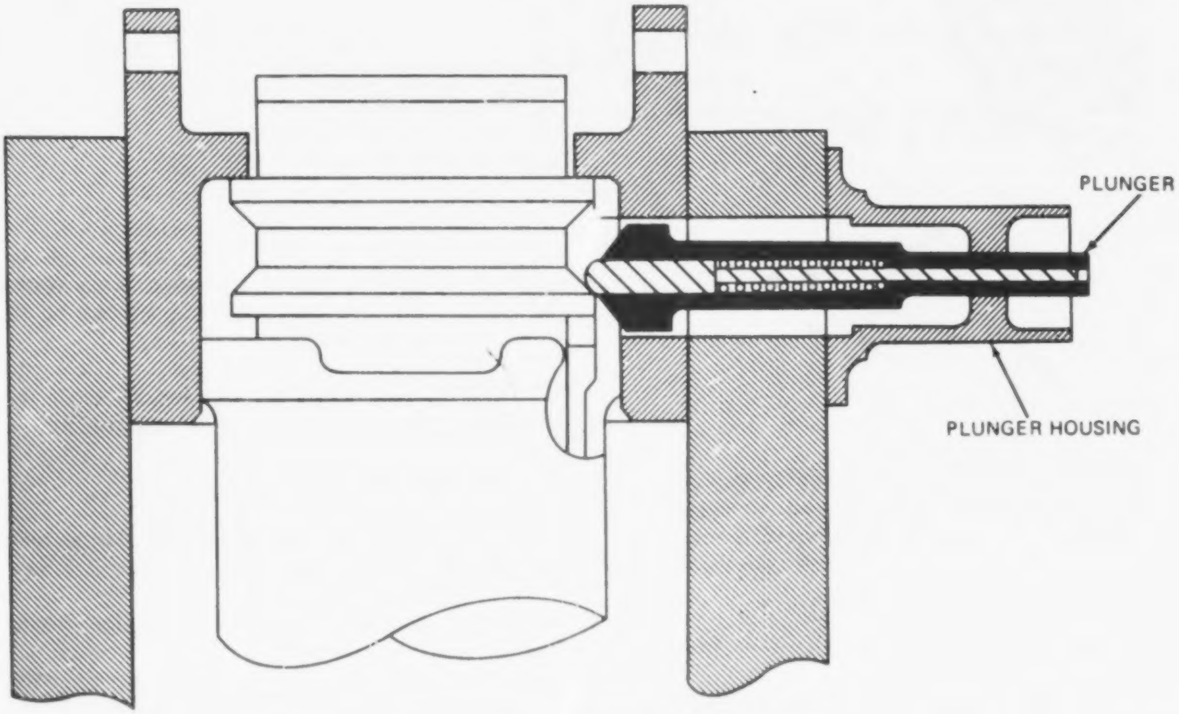


Figure 3-1. Ground safety lock location view



CORRECT (PLUNGER FULLY HOME)



INCORRECT (PLUNGER NOT FULLY HOME)

30VJ5M-2

Figure 3-2. Inspection of top latch mechanism

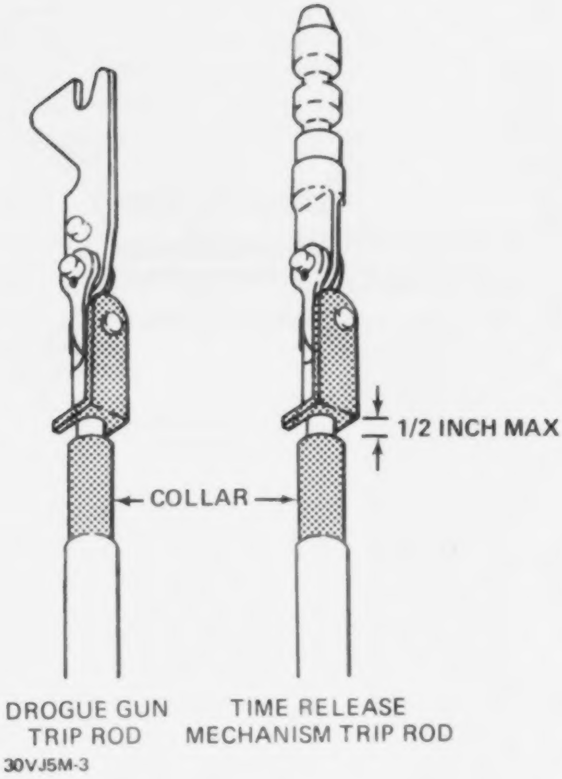


Figure 3-3. Trip rod indicating collar installation

seat. Quick-release type fittings are provided for attachment to adapters located on the parachute risers and the rigid seat survival kit (RSSK).

a. Inspection.

(1) Inspect harness and floating lap belt for cleanliness, fraying, discoloration and loose stitching.

(2) Inspect metal fittings and quick-release adapters for corrosion and damage.

NOTE

If any doubt of the serviceability of this system exists, a qualified parachute rigger should be consulted or the personnel harness assembly should be forwarded to a parachute maintenance shop for rework.

b. Installation.

(1) Attach harness to the parachute riser adapters and the floating lap belt to the RSSK retention adapter fittings.

(2) Check for quick-release action during installation of the adapters to the fittings for smoothness of operation.

c. Removal.

(1) Check quick-release action of fittings during removal.

(2) Remove harness and lap belt from seat and store in appropriate area if assembly meets the installation and removal check requirements. If repair is required, dispatch harness or belt to parachute riggers or replace with a serviceable harness assembly or floating lap belt.

3-18. Sticker Clips.

Sticker clips inspection. A sticker clip is located on each of the outer sides of the seat bucket. These clips provide a receptacle for the sticker strap lugs (figure 3-4). The sticker clips restrain the occupant in the ejection seat until the personnel parachute is deployed.

a. Inspect sticker clips on both sides of seat bucket for security of installation.

b. Ensure that each sticker strap lug is securely inserted into its respective sticker clip.

c. If defects are found, inform Direct or General Support level of maintenance.

3-19. Leg Restraint System.

a. Leg restraint cords and quick-release garters. The leg restraint cords (2, figure 1-8), attached to the quick-release garters (1), pull the occupant's legs against the ejection seat thigh supports during ejection by the initial movement of the seat.

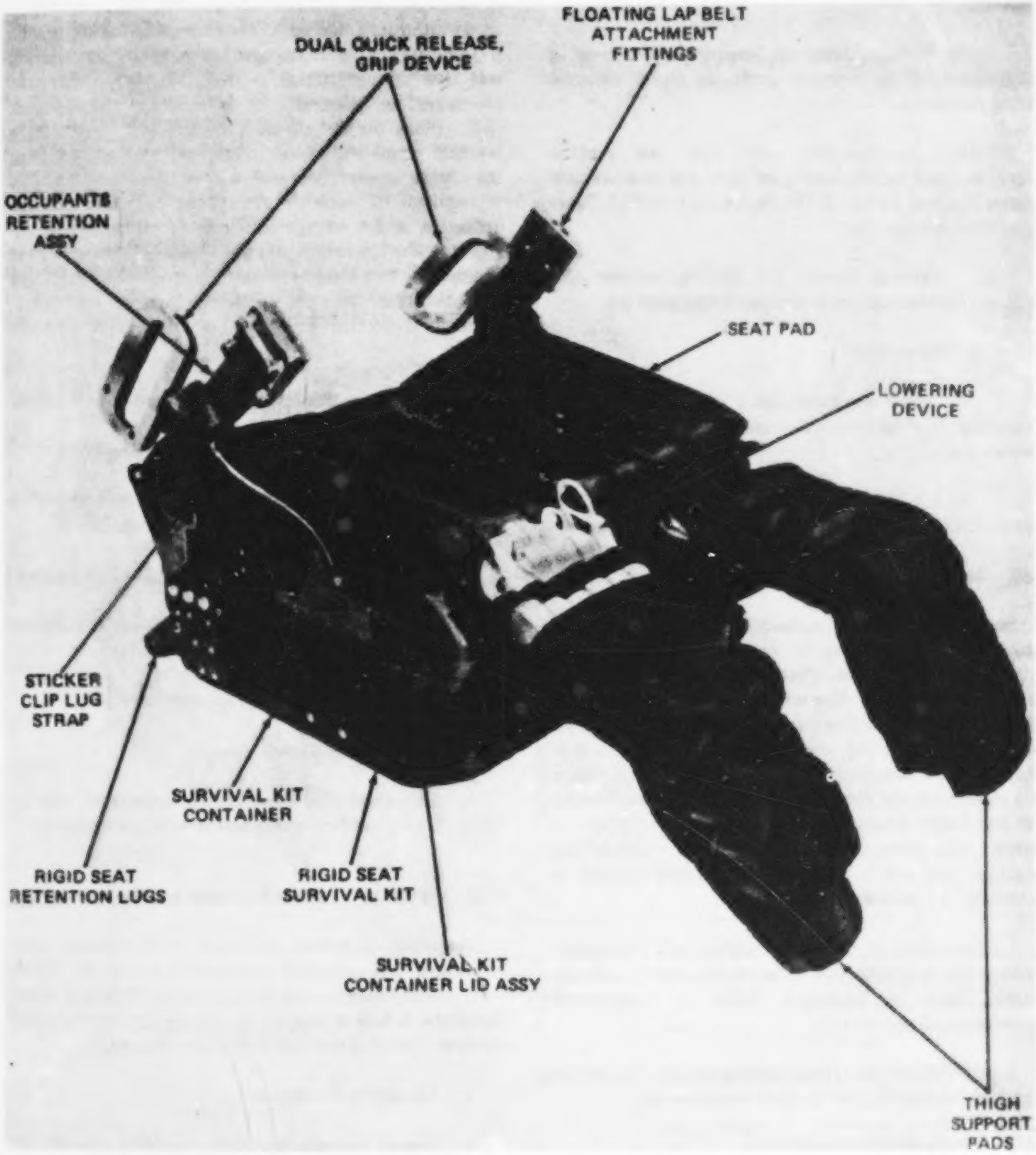
(1) *Cleaning.* Clean the leg restraint cords and quick-release garters in accordance with paragraph 3-6*d*.

(2) *Inspection.*

(a) Inspect leg restraint cords for fraying, loose stitching, and for cleanliness.

(b) Inspect quick-release garters for fraying, loose stitching, and cleanliness.

(c) Inspect hardware of leg restraint cords and quick-release garters for corrosion and for ease of operation.



30VJ5M-4

Figure 3-4. Seat pan component location

(d) Replace leg garters if found defective during inspection.

(e) Inform Direct or General Support level of maintenance if leg restraint cords are found defective during inspection.

b. Dual leg restraint cord lock and snubber unit. The dual leg restraint cord lock and snubber unit secures the lock fitting of the leg restraint cord (2, figure 1-8) to the ejection seat.

(1) *Servicing.* Service the dual leg restraint cord lock and snubber unit in accordance with figure 3-5.

(2) *Inspection.*

(a) Refer to paragraph 3-10*b* for operational procedures to check out the dual leg restraint cord and snubber unit.

(b) If defects are found during inspection, inform Direct or General Support level of maintenance.

3-20. Seat Actuating Jack Mechanism.

Seat actuating jack mechanism inspection. The seat actuating jack is located in back of the seat bucket, between the main beams. The shaft end of the actuating jack is bolted to the 40 g crossmember, and the motor end is attached to the seat bucket. The seat actuating jack motor operates off the aircraft 28-volt dc system and is actuated by a seat height adjustment switch (2, figure 3-6) located on the forward right side of the seat bucket. The seat height adjustment switch has three positions: up (switch aft), down (switch forward), and neutral. The height of the seat bucket may be adjusted through a distance of 4.7 inches.

a. Inspection of the seat actuating jack mechanism consists of the proper operation of the switch and seat travel. Refer to paragraph 3-10*d* for operational procedures.

b. If defects are found during inspection, inform Direct or General Support level of maintenance.

3-21. Emergency Oxygen System.

Emergency oxygen system inspection. The emergency oxygen system consists of a 22.5 cubic inch oxygen cylinder (13, figure 1-9) filled with 1,800 to 2,000 psi of breathing oxygen, and a manual actuating knob (2) located on the upper right side of the seat bucket. An oxygen hose (6) from the oxygen cylinder is routed to the upper right side of the seat bucket and is held in place by an oxygen quick-disconnect bridle and lanyard (5). An additional oxygen hose (4) is routed from the quick-disconnect clamp to the occupant's face mask. The emergency oxygen system is automatically actuated upon ejection. As the ejection seat rises during ejection, a trip lever (30) is deflected downward and transmits the deflection to the bellcrank (24), pulling on the oxygen clyinder cable, fracturing a breakoff nipple within the oxygen cylinder, and releasing the oxygen supply. Since only a 1/4-inch pull on the cable is required to actuate the oxygen cylinder, and the deflection is not enough to allow the bellcrank and trip lever to clear the striker pin, the 1/16-inch aluminum rivet securing the two links is sheared. This permits the trip lever and bellcrank to be deflected further downward, unrestricted by the limitations of the oxygen cylinder cable.

a. Inspect oxygen hose for cracks and deterioration.

b. Inspect oxygen hose fittings for serviceability.

c. Inspect oxygen quick-disconnect bridle and lanyard for fraying, loose stitching, and for proper installation.

d. Inspect oxygen cylinder for security of mounting.

e. Visually check oxygen cylinder quantity indicator for proper capacity.

f. Ensure quick-release pin is installed.

g. Inspect green knob for security.

h. If defects are found during inspection, refer to Direct Support or General Support level of maintenance.

3-22. Personnel Parachute Container and Restraint Straps.

Personnel parachute container and restraint strap inspection. The personnel parachute container (6, figure 1-2), which packs a 28-foot diameter inflation aided parachute, is held in position on the ejection seat by a long restraint strap (21) and a short restraint strap (22).

a. Inspect for cleanliness.

b. Inspect personnel parachute container covering for loose stitching, wear, deterioration, and security of cover to velcro fasteners.

c. Ensure ripcord D-ring is fully inserted in its proper position and secured by retainer clip.

d. Inspect personnel parachute (fiberglass) container for fractures.

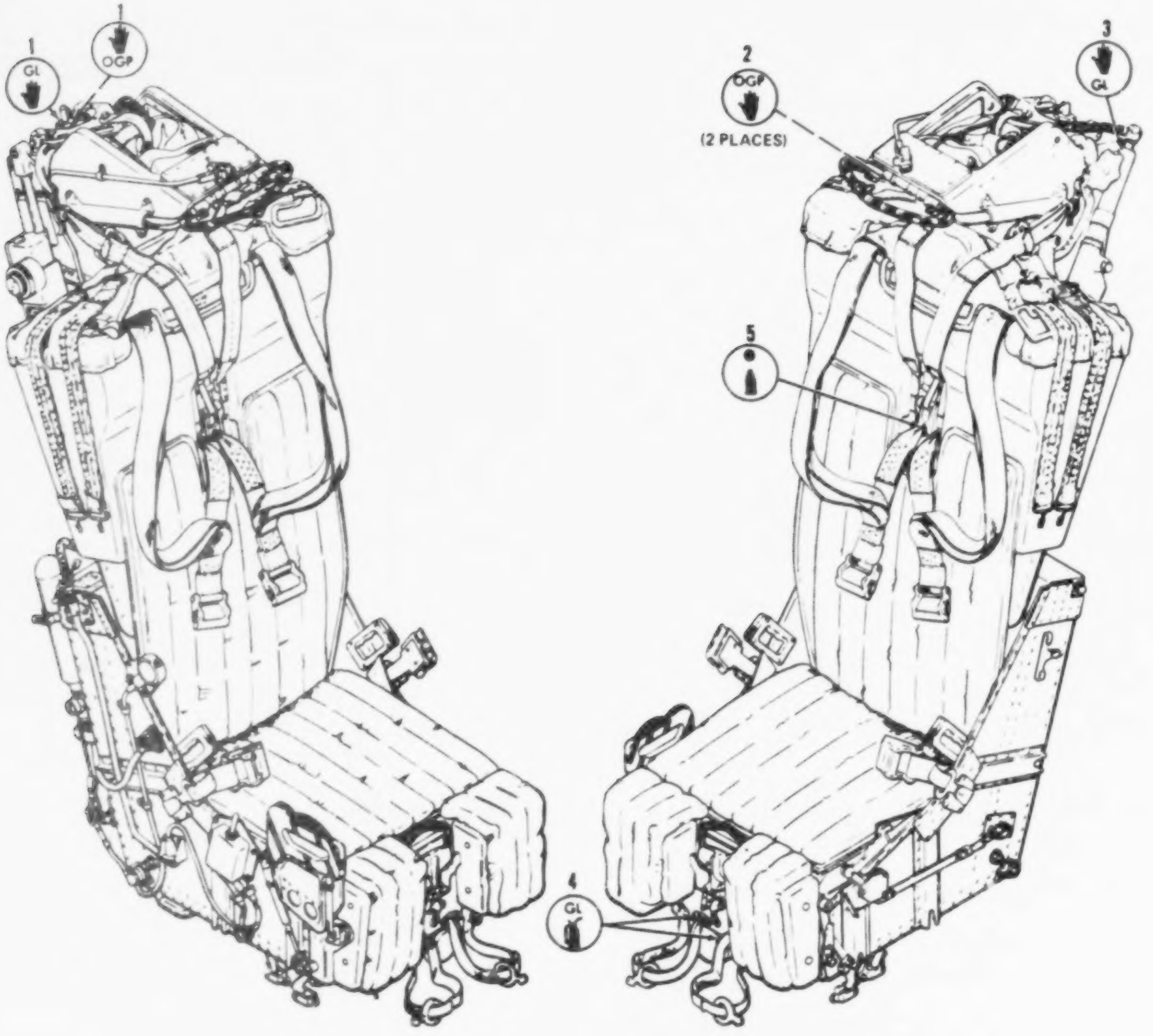


TABLE OF LUBRICANTS		
IDENTIFICATION LETTER	SPECIFICATION	TYPE OF LUBRICANT
GL	MIL-L-7870	LUBRICATING OIL, GENERAL PURPOSE
OGP	MIL-G-23827	GREASE, AIRCRAFT AND INSTRUMENT
•	MIL-L-23398	LUBRICANT, SOLID FILM

LUBRICATION GUIDE
FREQUENCY SYMBOLS

○ AS REQUIRED

APPLICATION SYMBOLS

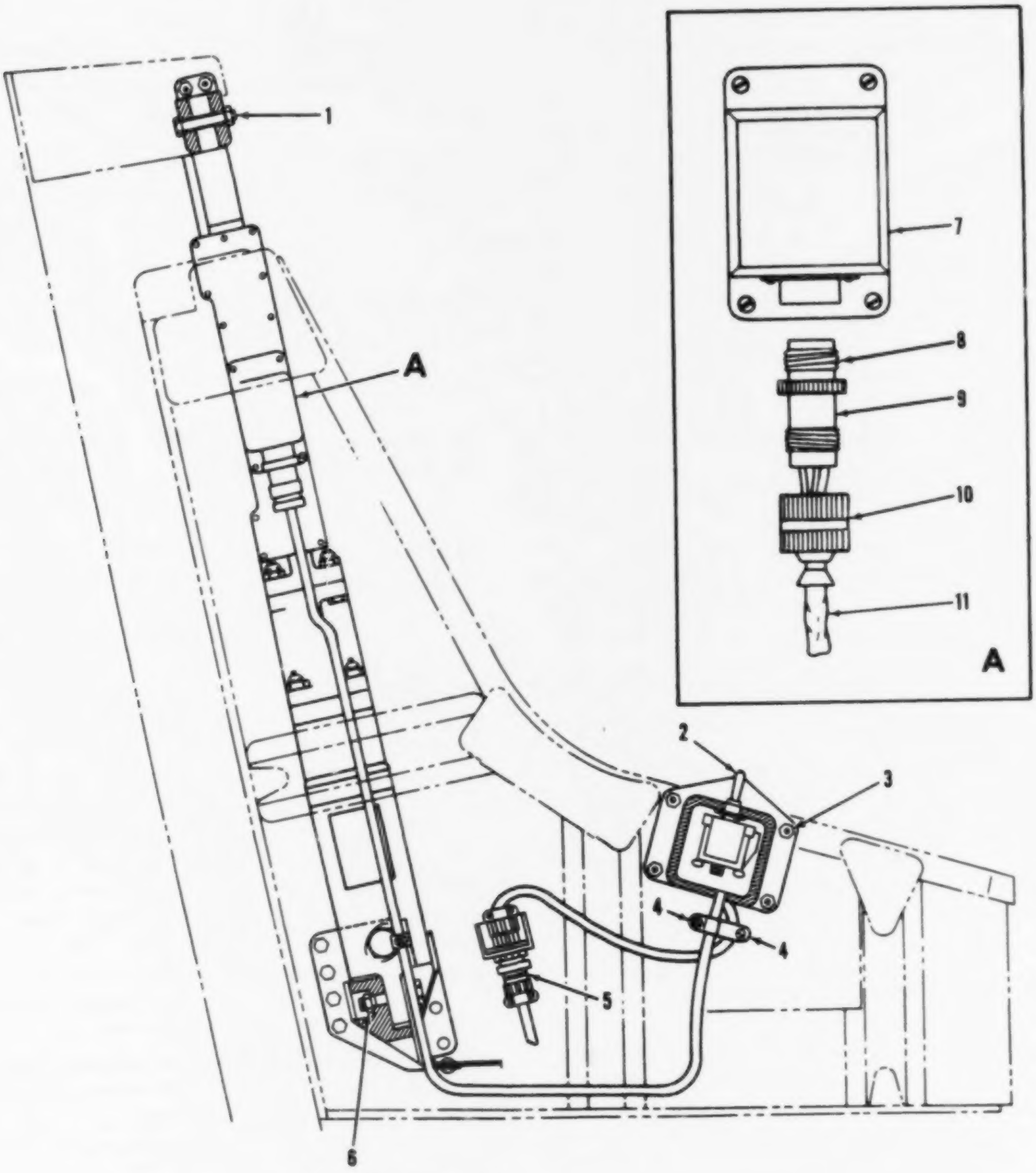
OIL CAN HAND CAN

PARTS NOMENCLATURE KEY

1. EJECTION GUN
2. FACE BLIND
3. DROGUE PISTON
4. LEG RESTRAINT CORD LOCK
5. INERTIA REEL MECHANISM

30VJ5M-6

Figure 3-5. Lubrication chart



1. BOLT, WASHER, LOCKNUT
2. SEAT HEIGHT ADJUSTMENT SWITCH
3. BOLT, WASHER, LOCKNUT
4. CLAMPS
5. ELECTRICAL CONNECTOR
6. BOLT, WASHER, LOCKNUT
7. SEAT RAISING ACTUATOR
8. CONNECTOR
9. CONNECTOR NUT
10. COLLAR
11. ELECTRICAL CABLE

30VJ5M-6

Figure 3-6. Seat actuation jack mechanism

e. Inspect personnel parachute restraint straps for loose stitching, fraying, and cleanliness.

f. Inspect to ensure that long and short restraint straps properly secure the container to the seat.

g. If discrepancies are found during inspection, inform parachute riggers or Direct or General Support level of maintenance.

3-23. RSSK, Seat Pan, and Cushion.

RSSK, seat pan, and cushion inspection. The seat pan (figure 3-4) provides proper support for the lower portion of the torso and is covered with a seat cushion. Attached to the seat cushion are padded thigh supports which contain the personnel lowering device. The seat, thigh, and back cushions are secured with self-adhering velcro material.

a. Remove cushions by pulling them away from seat and inspect RSSK seat pan for nicks, dents, fractures, and distortion.

b. Inspect velcro for adhesion to pan and thigh supports.

c. Inspect cushions for cleanliness, tears, and loose stitching.

d. Inspect the dual quick-release grip device for corrosion of components and fraying of cables and flexible conduit.

e. Inspect RSSK assembly for security of attachment by pulling up hard on the floating lap belt attachment fittings.

f. Replace cushions by aligning velcro strips and pressing firmly toward seat.

g. If discrepancies are found during inspection, inform Direct or General Support level of maintenance.

3-24. Lumbar Support Pan.

Lumbar support pan and cushion inspection. The lumbar support pan is contoured and cushioned (7, figure 1-2). The pan is hinged on the lower end and is prepositioned to accomodate the occupant's back position during seat bucket height adjustment.

a. Remove and inspect back cushion for cleanliness, tears, and loose stitching.

NOTE

Pad is secured to pan by velcro material.

b. Inspect velcro material for adhesion to lumbar support pan.

c. Inspect lumbar support pan for damage and security.

d. Inspect roller and bracket for damage and security.

e. If discrepancies are found during inspection, inform Direct or General Support levels of maintenance.

CHAPTER 4

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. PREPARATION FOR MAINTENANCE, STORAGE, AND RESHIPMENT

4-1. Preparation for Maintenance.

The MK-J5D Ejection Seat received from supply will require a 180-day special inspection prior to insatllation. (Refer to paragraph 4-6.)

4-2. Storage and Reshipment.

For storage and reshipment, uncrating, and unpacking of the MK-J5D Ejection Seat, refer to paragraph 5-33.

4-3. Removal Procedures for Ejection Seat and Telescopic Ejection Gun From Aircraft.

Removal procedures apply to all Model OV-1 and RV-1 (Mohawk) aircraft with MK-J5D ejection seats installed.

a. Removal of Escape Hatch. To remove escape hatch, proceed as follows:

(1) Remove nosewheel splash shield to gain access to torque tube mechanism (3, Figure 4-2).

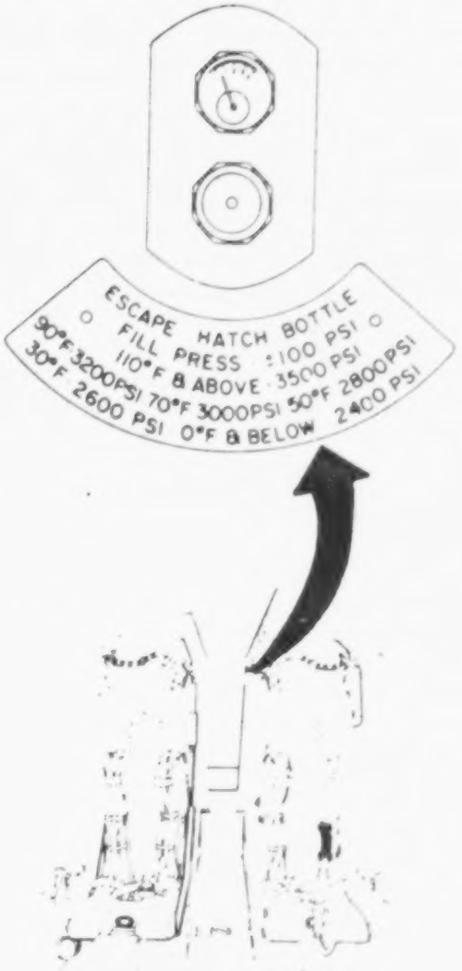
(2) Open right and left side cockpit entrance.

WARNING

To avoid personnel injury or equipment damage, loosen filler valve locking nut only enough to allow a slow rate of air escape (figure 4-1).

(3) Evacuate pressure in escape hatch pneumatic bottle by removing cap from filler valve and turning filler valve nut counterclockwise.

(4) Install two spacer blocks on top of fuselage at aft pivot pin covers to prevent damage top hinge covers during removal and installation of escape hatch. The spacer blocks may be fabricated from micarta or wood approximately 3/8 inch thich and 1/2 inch square.


ESCAPE HATCH BOTTLE
FILL PRESS ±100 PSI
110°F & ABOVE 3500 PSI
90°F 3200PSI 70°F 3000PSI 50°F 2800PSI
30°F 2600 PSI 0°F & BELOW 2400 PSI

40VJ5M-1

Figure 4-1. Air release for escape hatch actuator bottle

(5) From aft side of torque tube mechanism, insert 3/8 inch diameter pin (4, Figure 4-2) in hole on right end of torque tube. (Note: a cut-off screwdriver with a 3 inch shank is ideal for this procedure). Do not insert pin more than 1 inch thru torque tube. This is to avoid damage to airframe structure.

(6) Rotate torque tube mechanism with pin by pulling downward on pin. This will slide the escape hatch aft.

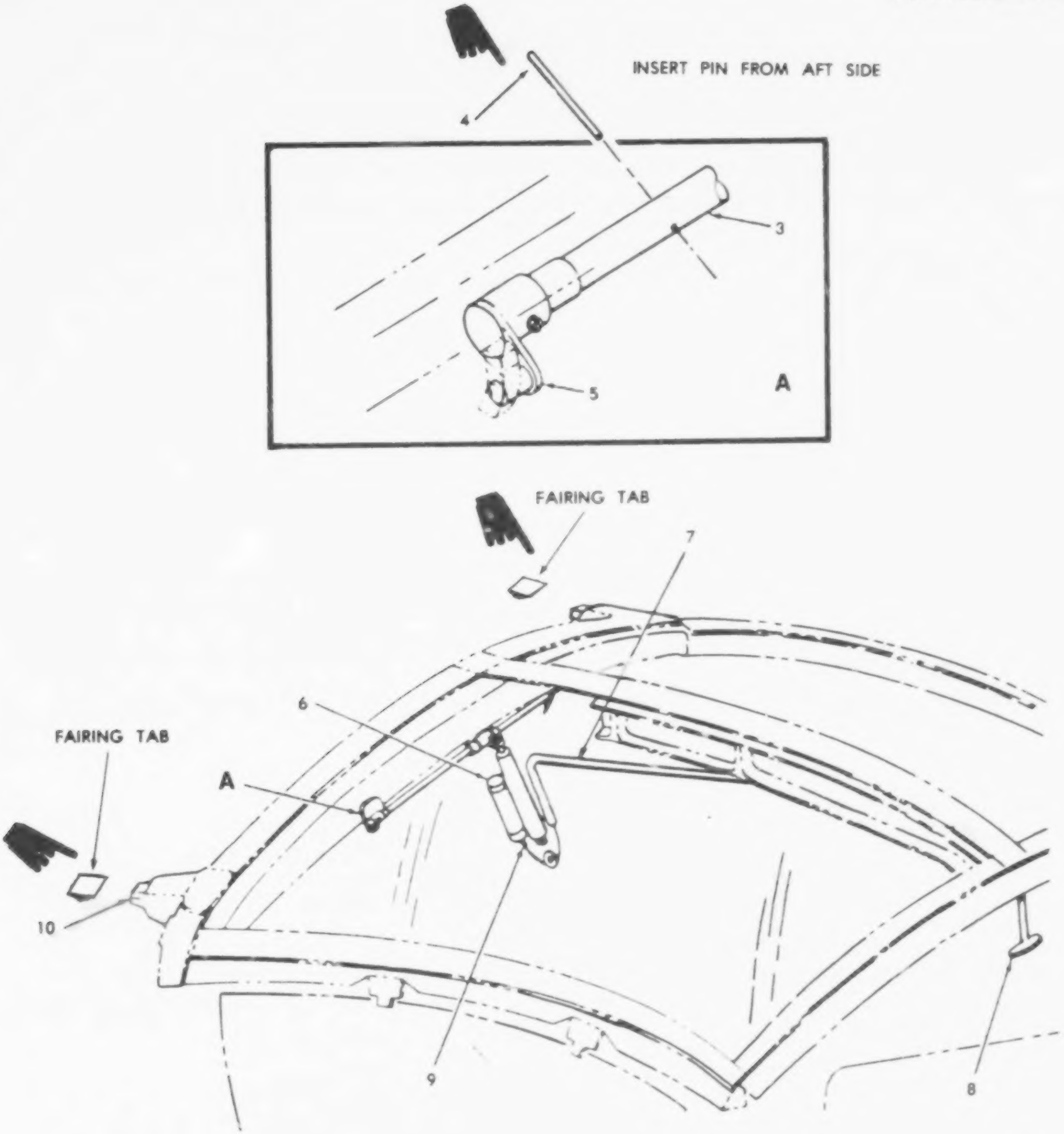
(7) Disconnect the H/F wire antenna from the antenna fitting at the top of fuselage. Note: A spring loaded quick disconnect is attached to the antenna wire.

(8) Lift the escape hatch leading edge to an angle of not more than 45 degrees to the top of the aircraft. Move the escape hatch forward until cantilever arms (10) clear the aft pins and remove the escape hatch. A minimum of two personnel are required. One in the cockpit and one on top of the aircraft fuselage.

(9) Connect auxillary power to aircraft. Raise pilots and co-pilots seat buckets to center of travel. This is to accommodate installation of the seat hoisting sling.

(10) Disconnect auxillary power from the aircraft.

(11) Disconnect the seat height electrical connectors from the right side of the pilots and co-pilots seat buckets.



1. DELETED
2. DELETED
3. TORQUE TUBE
4. PIN
5. OUTBOARD CAMS
6. PNEUMATIC ACTUATOR
7. LANYARD (ENCLOSED IN TUBING)
8. JETTISONING HANDLE
9. FIRING PIN
10. CANTILEVER ARMS

Figure 4-2. Removal of escape hatch. 40VJM-2

CAUTION

Ensure that all aircraft electrical power is turned off after positioning seat bucket to center of travel.

b. Disarming of Seat Prior to Removal. Disarm the ejection seat as follows:

(1) Ensure ground safety locks are installed.

(2) Disconnect drogue line from top of drogue gun piston (3, figure 4-3) by removing bolt and nut (2) from special shackle (1).

(3) Remove lockwire securing drogue gun barrel (5) to firing body (8) and remove lockwire and lead seal.

WARNING

Use extreme caution when removing drogue gun barrel to prevent dropping the drogue gun cartridge.

(4) Remove drogue gun barrel (5) from firing body (8) using wrench, Part No. WS1516.

WARNING

Use extreme caution when removing drogue gun cartridge, as cartridge has a percussion-type primer cap.

(5) Remove drogue gun cartridge, Part No. MBEU/7536, from drogue gun barrel (5) using extractor, Part No. 105GT1046.

NOTE

For handling of cartridge, refer to TM 9-1300-206.

(6) Reinstall drogue gun barrel (5) handtight in firing body (8) to prevent foreign matter from entering barrel.

WARNING

Never remove firing pin sear from primary firing mechanism until primary cartridge has been removed from primary cartridge breech. Any attempt to do so will cause the cartridge to be fired. Ensure that the firing pin sear is secured by the safety pin when installing or removing the firing cables. Failure to do so will result in serious injury or death to maintenance personnel.

(7) With safety pin installed in firing pin sear (4, figure 4-4) of ejection gun primary firing mechanism, push sear forward as far as possible and remove firing cables.

(8) Remove lockwire securing primary firing mechanism (6) to primary cartridge breech (9). Remove lockwire and lead seal.

WARNING

When removing safety pin from firing pin sear of ejection gun primary firing mechanism, ensure firing pin sear does not become dislodged. Never remove safety pin from inside the flight compartment, or while leaning over the ejection seat or the ejection gun. Removal of firing pin sear from under firing pin will cause the ejection gun to fire.

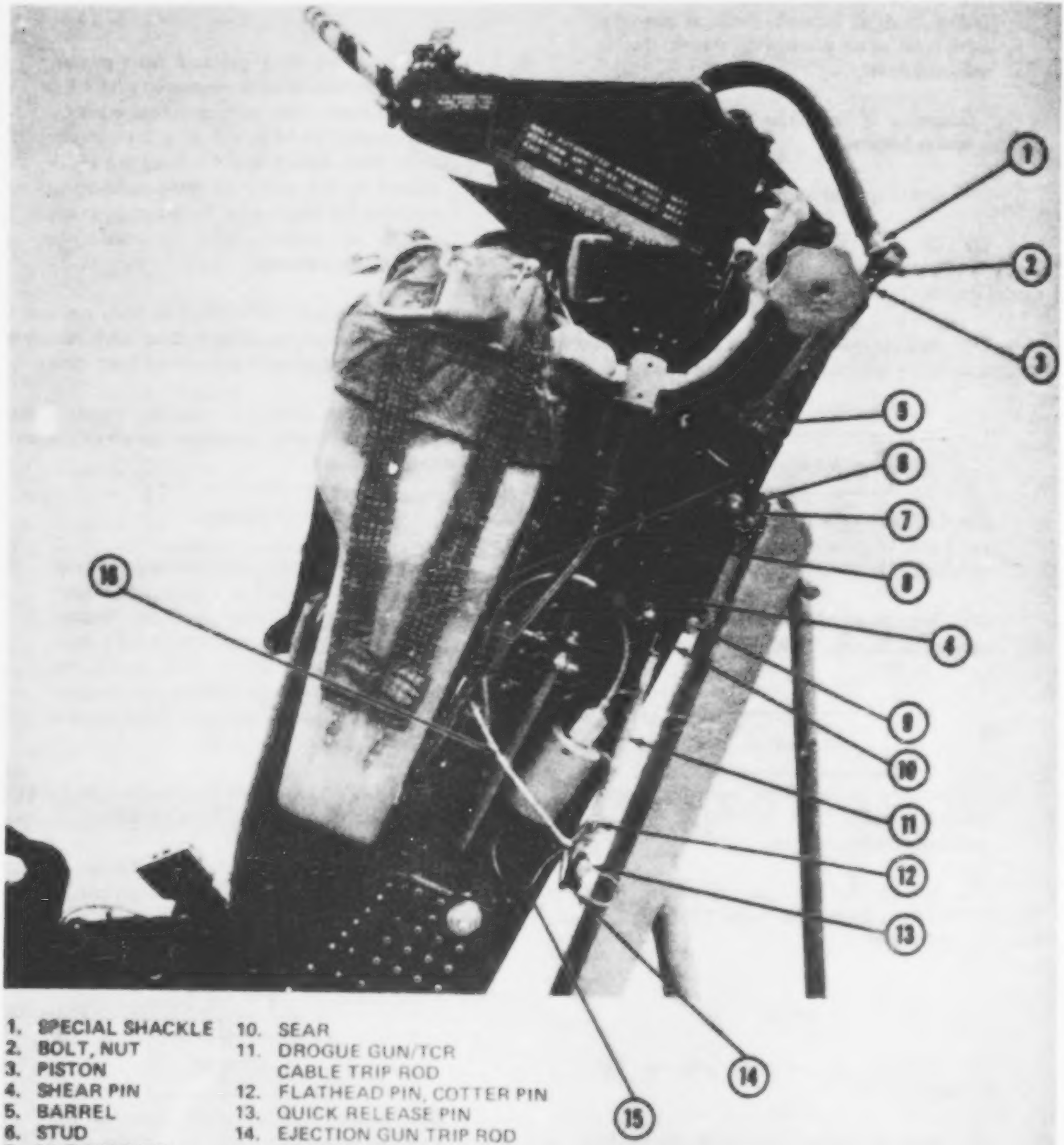
(9) Carefully remove safety pin (5) from firing pin sear (4) on ejection gun primary firing mechanism.

(10) Unscrew primary firing mechanism (6) from primary cartridge breech (9) with spanner wrench, Part No. 128GT10155.

(11) Remove primary firing mechanism and inner tube retainer collar (10, figure 4-4).

WARNING

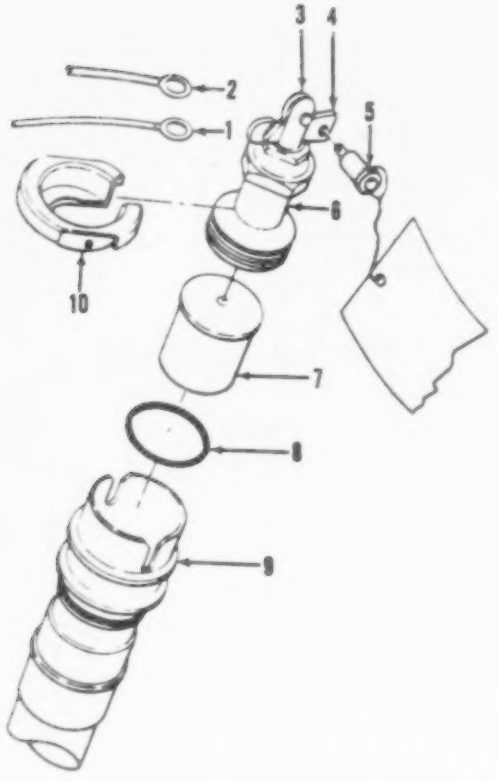
Use extreme caution when removing and handling primary cartridge, as cartridge has a percussion-type primer cap. (Refer to TM 9-1300-206.)



1. SPECIAL SHACKLE
2. BOLT, NUT
3. PISTON
4. SHEAR PIN
5. BARREL
6. STUD
7. NUT, WASHER
8. FIRING BODY
9. GROUND LOCK PIN
10. SEAR
11. DROGUE GUN/TCR CABLE TRIP ROD
12. FLATHEAD PIN, COTTER PIN
13. QUICK RELEASE PIN
14. EJECTION GUN TRIP ROD CROSS BEAM
15. TCR CABLE
16. BUNGEE

40VJ6M-3

Figure 4-3. Drogue gun component location



1. LOWER FIRING CABLE (THIN)
2. UPPER FIRING CABLE (THICK)
3. FIRING PIN
4. FIRING PIN SEAR
5. SAFETY PIN
6. PRIMARY FIRING MECHANISM
7. PRIMARY CARTRIDGE
8. PRIMARY CARTRIDGE O-RING
9. PRIMARY CARTRIDGE BREECH
10. INNER TUBE RETAINER COLLAR

40VJ5M-4

Figure 4-4. Ejection gun firing mechanism components

(12) Remove primary cartridge, Part No. MBEU/26434, from primary cartridge breech using cartridge extractor, Part No. GR506. (See figure 4-5.)

CAUTION

Do not install inner tube retainer collar at this time.

(13) Reinstall primary firing mechanism (6, figure 4-4) handtight in primary cartridge breech (9).

c. *Preparation for Seat Removal.*

(1) Withdraw top latch plunger by installing handwheel, Part No. MBEU/26568, and turning clockwise until handwheel bottoms. (See figure 4-6.)

NOTE

Do not remove handwheel unless ejection gun or plunger retaining tool, Part No. 4920-0V1-020, is placed in position. The top latch plunger is held in the plunger housing by the holding action of the handwheel and/or ejection gun primary cartridge breech or plunger retaining tool.

(2) Disconnect drogue gun/TCR initiator cable assembly trip rod (11, figure 4-3) by disconnecting quick-release pin (13) from ejection gun trip rod crossbeam (14). Install quick-release pin (13) in drogue gun safety pin hole.

(3) Remove screw, washer, and nut securing aircraft oxygen system hose clamp to ejection seat. Disconnect oxygen hose from ejection seat.

(4) Disconnect leg restraint cords by removing two quick-relase pins (9, figure 1-8) from floor fittings in aircraft.

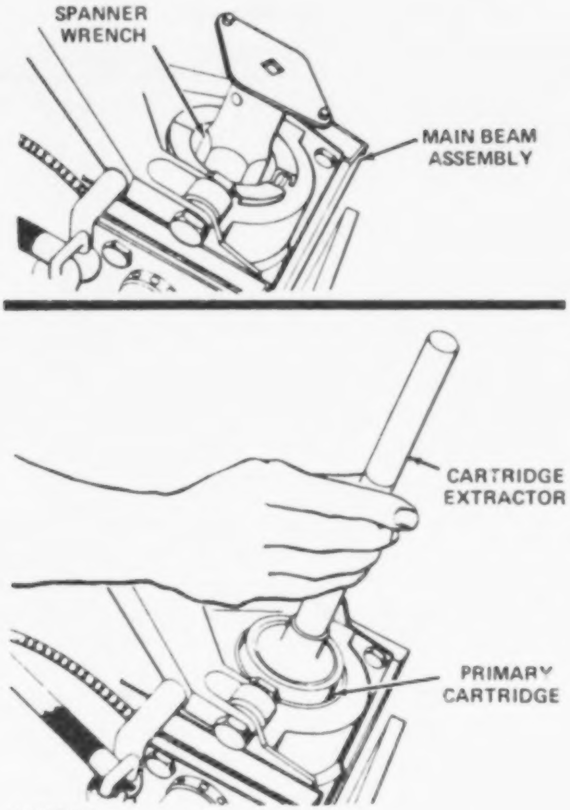
CAUTION

Do not reinstall time release mechanism quick-release pin in ejection gun trip rod crossbeam until ejection seat is completely removed from aircraft. Failure to observe this procedure will result in discharging of the oxygen cylinder.

(5) Disconnect time release mechanism trip rod (2, figure 4-7) by removing quick-release pin (3) from ejection gun trip rod crossbeam (4).

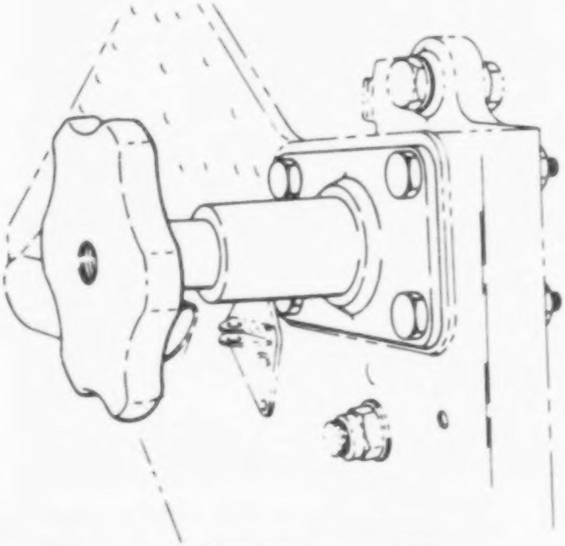
NOTE

On aircraft equipped with APX-72, ensure APX-72 plug is disconnected prior to ejection seat removal.



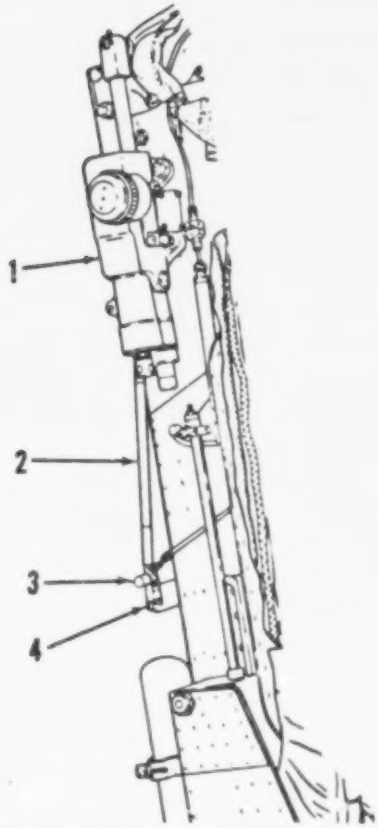
40VJ5M-5

Figure 4-5. Primary cartridge removal



40VJ5M-6 (HANDWHEEL INSTALLED)

Figure 4-6. Top latch mechanism



1. TIME RELEASE MECHANISM
2. TRIP ROD
3. QUICK-RELEASE PIN
4. EJECTION GUN TRIP ROD CROSSBEAM

40VJ5M-7

Figure 4-7. Disconnecting time release mechanism trip rod

d. *Removal of Seat From Aircraft.*

(1) Attach hoisting sling, Part No. 105GT1024-33, to ejection seat at four hoisting points. (See figure 4-8.)

CAUTION

Ensure inner tube retainer and firing pin sear safety pin are removed prior to ejection seat removal.

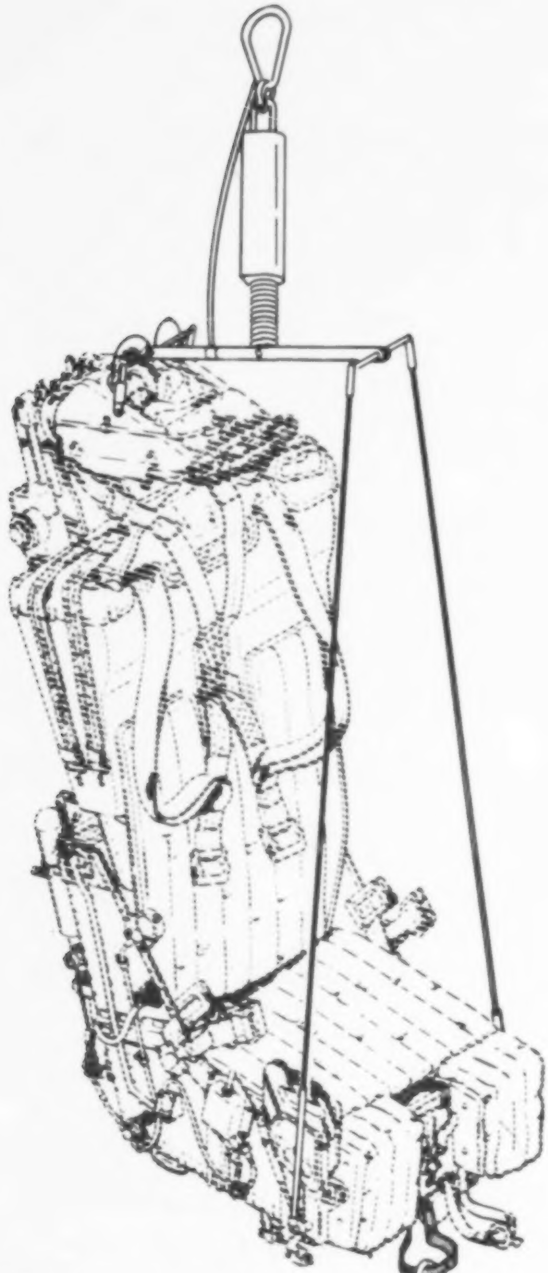

40VJ5M-8

Figure 4-8. Ejection seat hoisting points

(2) Position overhead hoist directly over ejection seat and mate hoist hook to hoisting sling eye on spring scale.

CAUTION

When removing ejection seat, do not exceed 200 pounds on spring scale. If ejection seat does not move, ensure top latch plunger is completely withdrawn. If 200 pounds spring scale reading is exceeded, perform special inspection. (Refer to paragraph 4-5a.)

(3) **Take up tension until spring scale reads approximately 150 pounds (white line on spring scale) and shake ejection seat with hands to break it free from its mounting. (See figure 4-9.)**

(4) Grasp top of ejection seat and pull up sharply. Raise ejection seat approximately 12 inches.

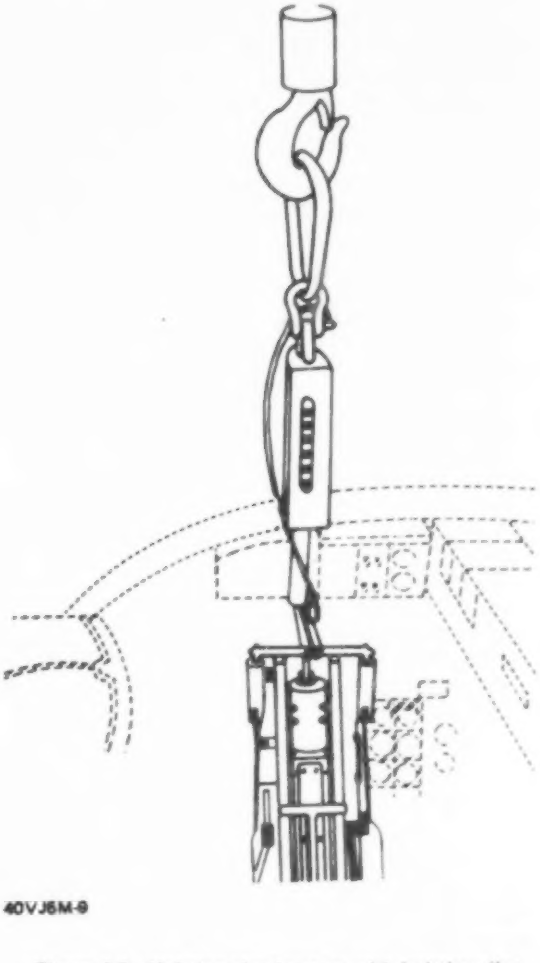

40VJ6M-9

Figure 4-9. Hoisting ejection seat with hoisting sling

(5) Disconnect electrical lead to seat height adjustment actuating jack at quick-disconnect on right side of seat bucket (14, figure 1-2).

(6) Remove quick-release pin from emergency oxygen system (15).

(7) Raise ejection seat with overhead hoist until the alignment tool can be extended. Extend alignment tool and insert quick-release pin in alignment tool (figure 4-11).

(8) Install rocket safety pin 134SEME10054 in hole of TCR motor initiator located under the seat bucket.

(9) Pull quick-release pin in rear of alignment tool, Part No. 105GT1024-59, and break alignment tool. Install alignment tool on top of ejection gun (figure 4-10).

(10) Install guillotine safety pin 134SEME10053 in hole in the sear.

(11) Raise ejection seat until bottom of ejection seat clears top of ejection gun. Disengage alignment tool from ejection gun by lifting upward on release lever of alignment tool and remove alignment tool from ejection seat.

(12) Install ejection seat on seat cradle, Part No. 105GT1040, as follows:

(a) Install transporation cradle mounting rail on ejection seat slippers (figure 4-14).

(b) Install mounting rail and ejection seat on seat cradle (figure 4-13).

(13) Remove hoisting sling from ejection seat.

e. Disarming of Guillotine After Seat Removal.

WARNING

Never remove firing pin sear from guillotine initiator firing mechanism until guillotine cartridge has been removed from guillotine initiator breech. Any attempt to do so will cause the cartridge to be fired. Ensure that firing pin sear is secured by the safety pin when installing or removing the manual override handle link rod.

(1) With safety pin, Part No. 134SEME10053 (7, figure 4-14), installed in sear (3) of guillotine firing mechanism (4), push sear up as far as possible, and remove manual override handle connecting link rod (2).

(2) Remove lockwire securing breech to tab washer. Remove lead seal.

WARNING

Use extreme caution when removing breech to prevent dropping the guillotine cartridge.

(3) With safety pin (7) still in sear (3), remove breech (5) using tool, Part No. VSB2022.

WARNING

Use extreme caution when removing and handling guillotine cartridge, as cartridge has a percussion-type primer cap. (Refer to TM 9-1300-206.)

(4) Remove guillotine cartridge from breech (5) using extractor, Part No. 105GT1046.

(5) Reinstall breech (5) handtight into guillotine initiator housing (6).

f. Removal of Telescopic Ejection Gun From Aircraft.

(1) Remove ejection gun upper clamp fittings on aircraft sloping bulkhead by removing locknut (1, figure 4-15), washer (2), and bolt (3).

(2) Remove locknut (4) and bolt (5) securing ejection gun (6) to lower pivot and remove ejection gun from aircraft.

(3) Transport ejection gun and seat to authorized work area.

g. Removal Of Auxiliary Cartridges From Telescopic Ejection Gun.

(1) Remove auxiliary cartridges, Part No. MBEU/29231, from ejection gun as follows:

CAUTION

Do not attempt to break or pull lockwire from auxiliary cartridge chamber cap or lockwire holes may break out.

(a) Remove lockwire from lower auxiliary cartridge chamber cap.

(b) Carefully unscrew lower auxiliary cartridge chamber cap with spanner wrench, Part No. 128GT10155. (See figure 4-16.)

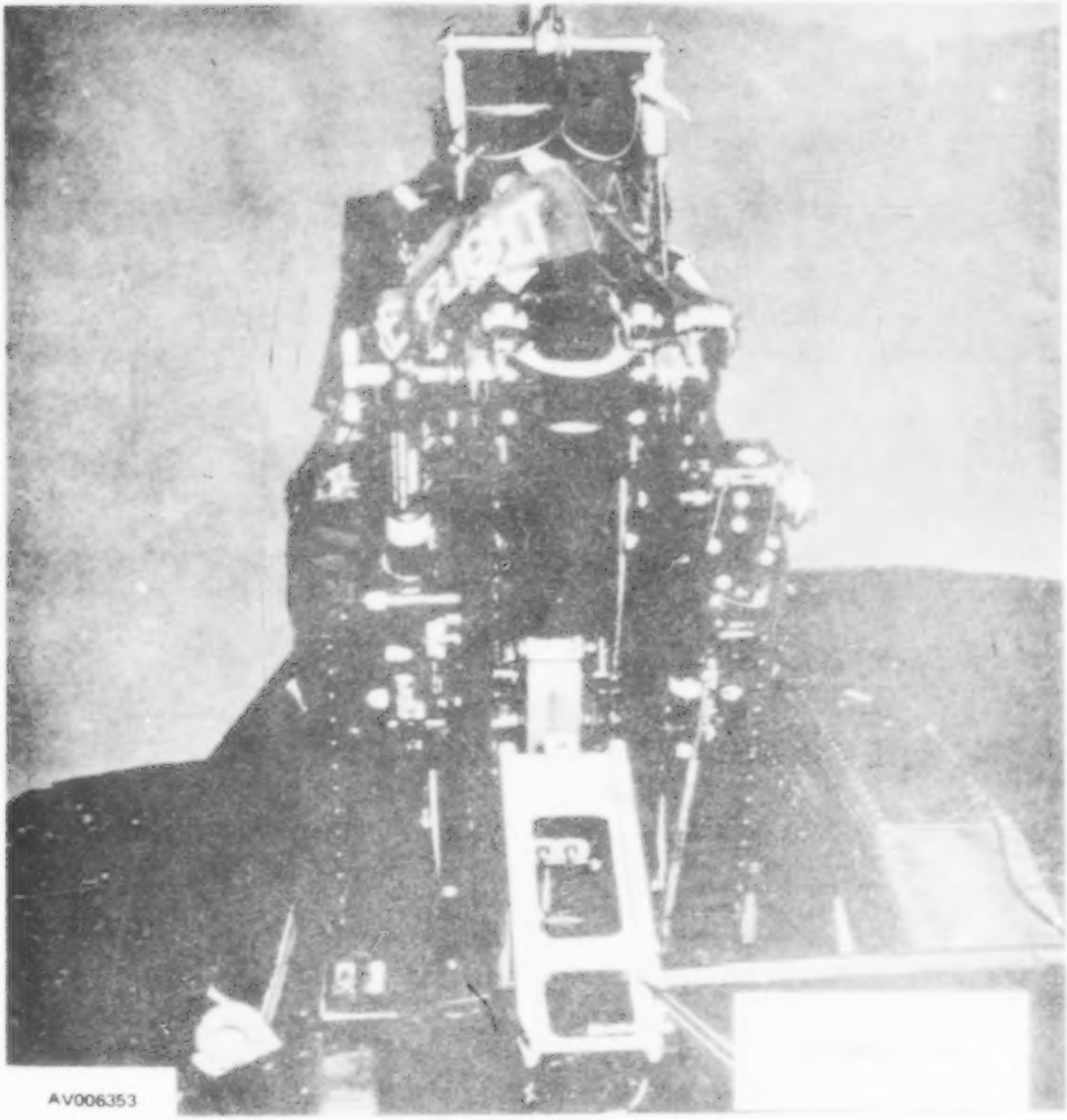


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Figure 4-10. Alignment tool installed on ejection gun (broken position)

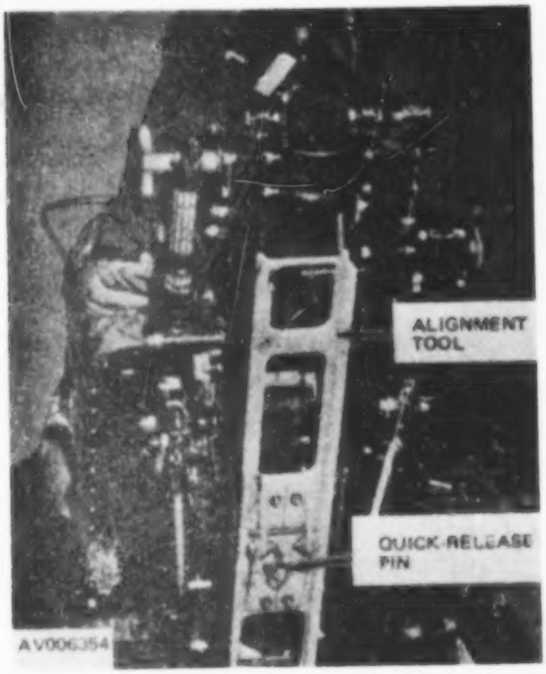


Figure 4-11. Alignment tool installed on ejection gun (extended position)

WARNING

Although the auxiliary cartridges do not contain percussion-type primer caps, they are filled with an explosive powder which, if accidentally fired by either spark or flame, could cause death or serious injury.

(c) Remove auxiliary cartridge using cartridge extractor, Part No. GR506.

NOTE

Handle auxiliary cartridges in accordance with TM 9-1300-206.

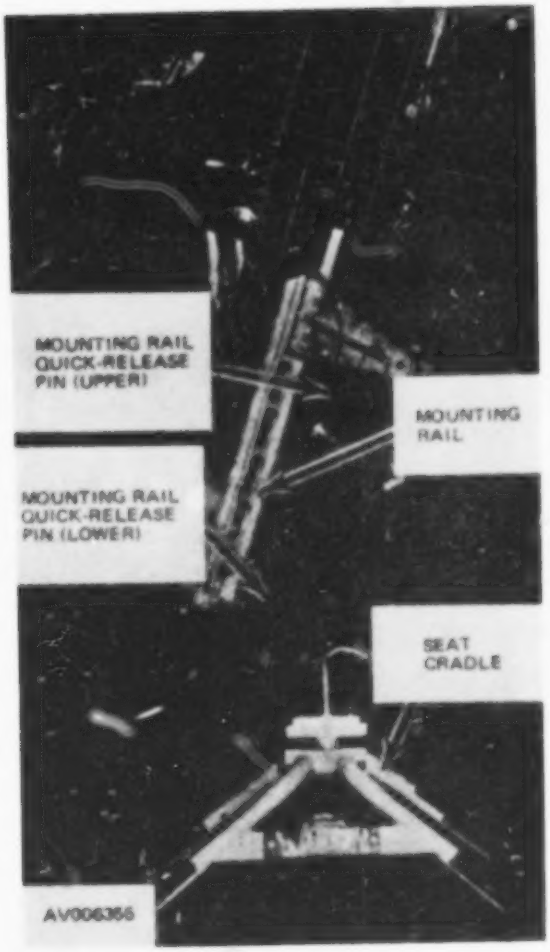

MOUNTING RAIL QUICK-RELEASE PIN (UPPER)
MOUNTING RAIL
MOUNTING RAIL QUICK-RELEASE PIN (LOWER)
SEAT CRADLE
AV006356

Figure 4-12. Installation of transportation cradle mounting rail on ejection seat slippers

(d) Remove auxiliary cartridge seal from cartridge chamber.

(e) Repeat preceding substeps *(a)* through *(d)* for removal of upper auxiliary cartridge.

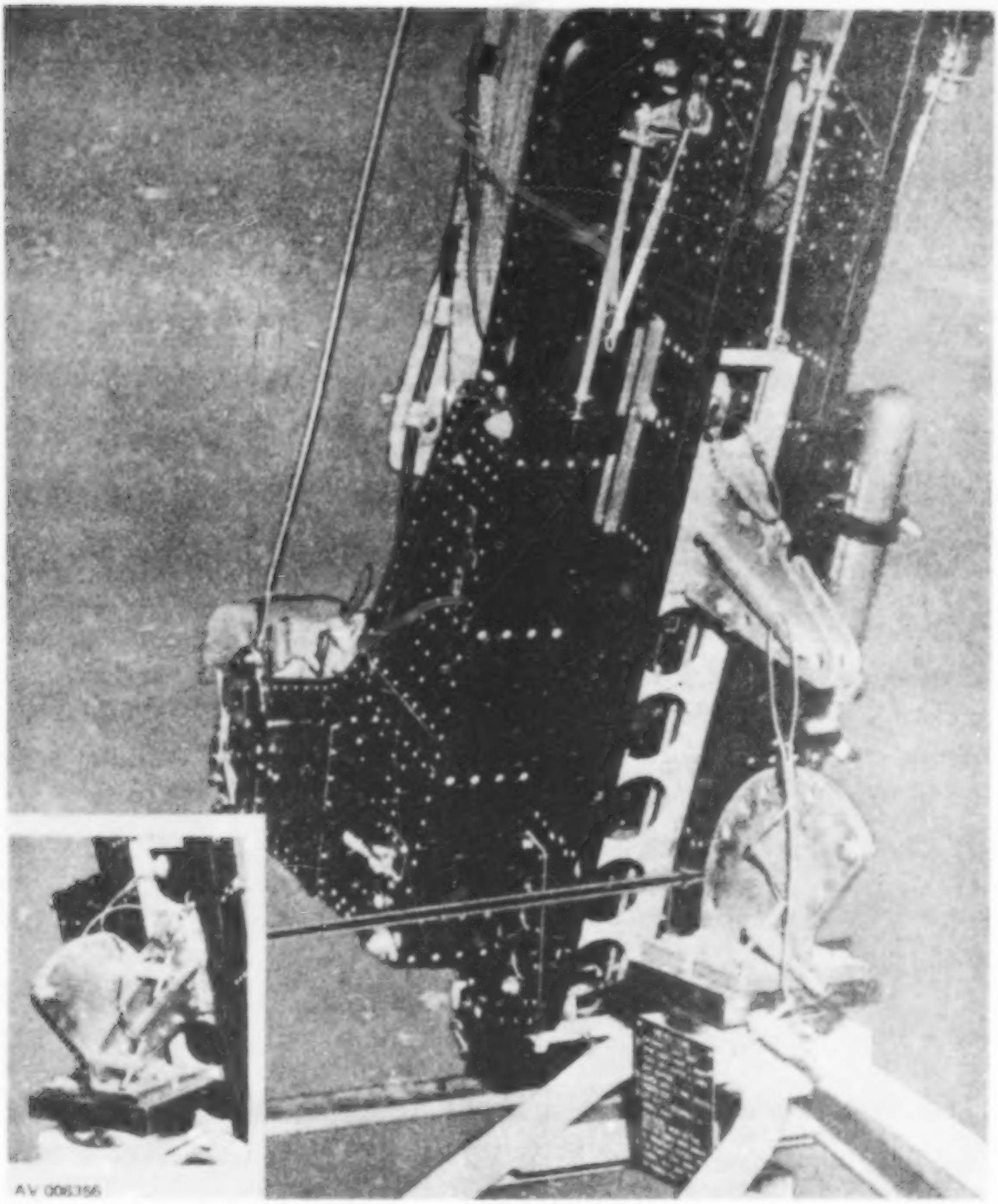
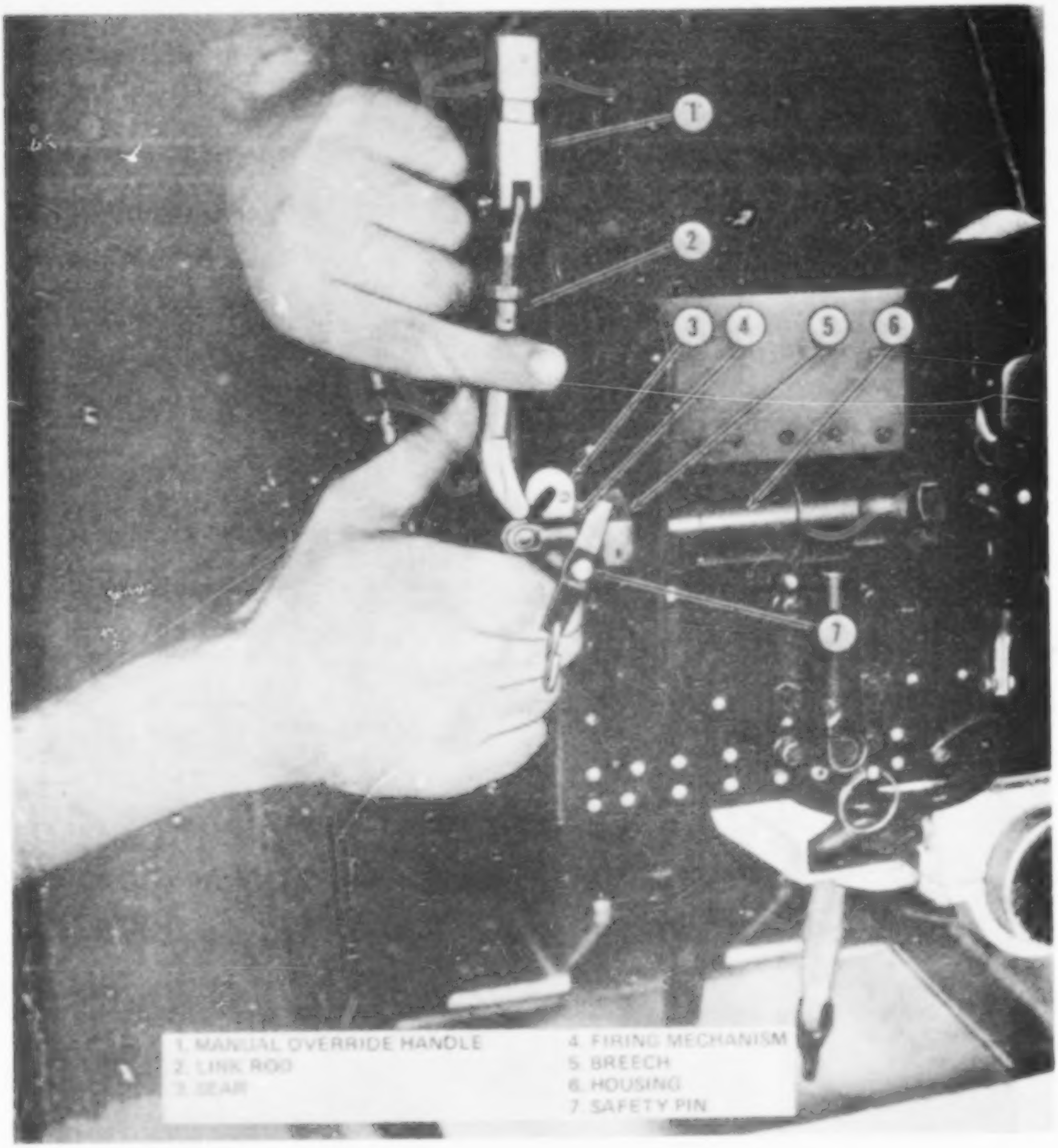
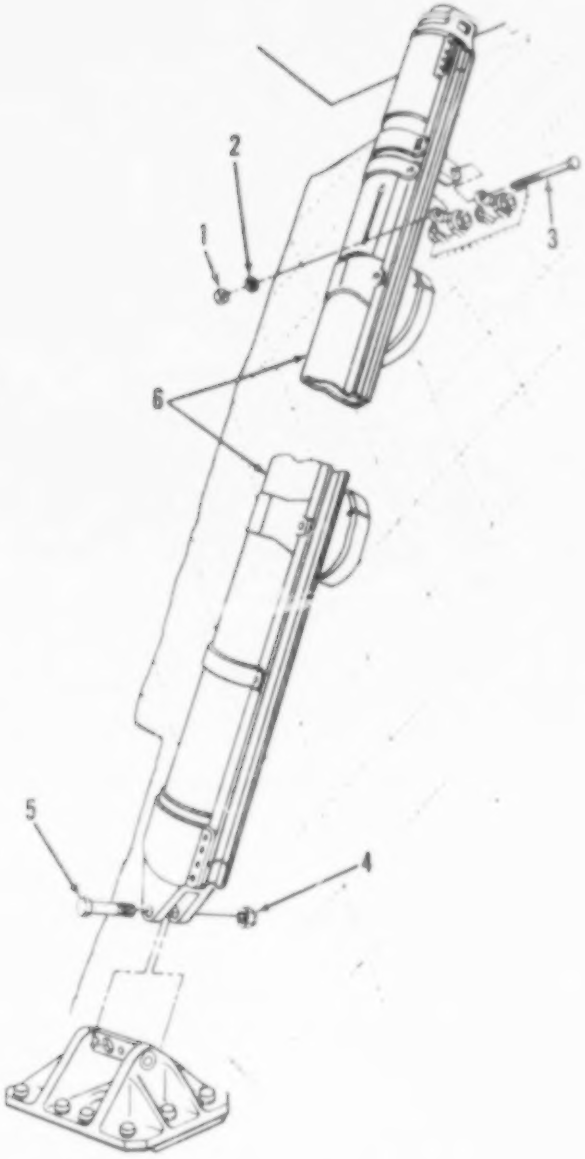


Figure 4-13. Mounting rail and ejection seat on seat cradle



40VJ5M-10

Figure 4-14. Removal of manual override handle link rod



1. LOCKNUT
2. WASHER
3. BOLT
4. LOCKNUT
5. BOLT
6. EJECTION GUN

40VJ5M-11

Figure 4-15. Location view of ejection gun mounting points

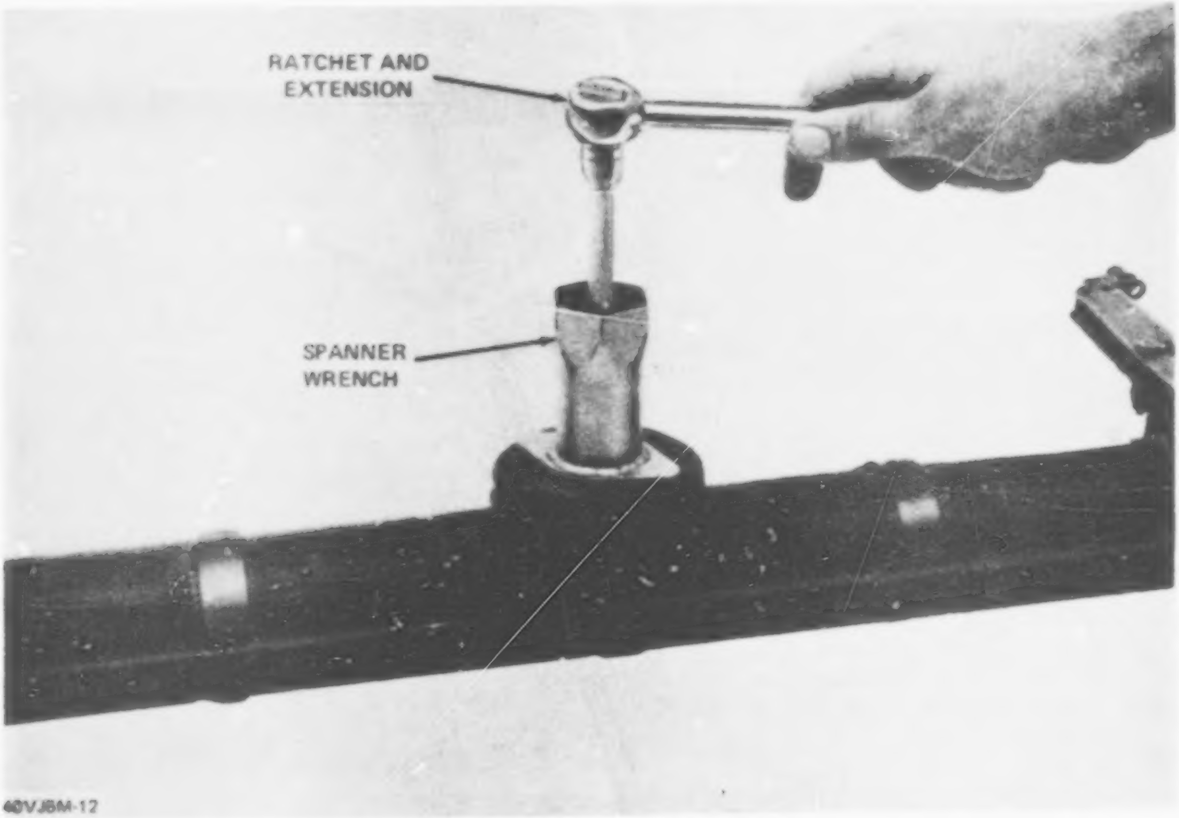


Figure 4-16. Removal of lower auxiliary cartridge

Section II. CHECKOUT AND ANALYSIS

4-4. General.

The following inspections shall be performed by Direct Support and General Support maintenance.

4-5. Special Inspections.

Special inspections consist of visual inspection and specified checkout procedures to verify serviceability when an abnormal condition exists on the ejection seat or the components of the ejection seat.

a. Spring Scale Reading Exceeding 200 Pounds. When 200-pound spring scale reading occurs during ejection seat removal, proceed as follows:

(1) Inspect top latch plunger for damage. (Refer to paragraph 5-7c.)

(2) Inspect top latch plunger indicating dowel pin for scoring.

(3) Check ejection seat slippers for prope alignment. (Refer to paragraph 4-6r.)

(4) Verify proper clearances between the ejection gun guide rails and slippers. (Refer to paragraph 5-29.)

(5) Inspect seat lift points and lower portion of ejection seat bucket for damage and deformation.

(6) Verify freedom of movement of seat bucket.

NOTE

Disconnect seat raising actuator and manually elevate and lower seat bucket.

(7) Verify proper operation of the manual override system. (Refer to paragraph 4-6b.)

NOTE

Release of attachment points must be in proper sequence.

(8) Upon receiving new or overhauled drogue guns or time release mechanisms, perform time delay checks in accordance with paragraph 4-6k or 4-6l, as applicable.

b. Inspection requirement after guillotine has been inadvertently fired: Replace activated guillotine components.

CAUTION

The guillotine components are not repairable after firing. Burnt powder and gaseous contaminants will cause severe corrosion.

c. Inspection requirement after ejection seat has been fired: Replace ejection seat with serviceable assembly. The ejection seat is a "one-time" use item and not recoverable after ejection.

d. Inspection requirement after M119 (TCR) rocket motor has been fired: Replace ejection seat with serviceable assembly if ejected or severally damaged as a result of inadvertent rocket motor firing. Locally dispose of expended explosives and ejection seat catapult assembly.

e. Inspection requirement after ejection seat has been accidently dropped onto a concrete, asphalt or equivalent surface:

(1) Dropped four (4) feet or less:

(a) Visually inspect structure for damage.

(b) Operationally test seat elevation mechanism through full seat travel. Replace motor if binding or erratic.

(c) Remove M-119 rocket motor and visually inspect seat attachment brackets for damage. If deformed or damaged, replace the ejection seat with a serviceable assembly.

NOTE

M119 rocket motor is not rendered unserviceable by a four (4) foot drop.

(d) Inspect guillotine rigid tube for crushing at seat bottom. Replace if damaged.

(e) Inspect M119 rocket motor initiator cable and conduit for damage. Replace if conduit is crushed.

(f) Lift lowering line thigh pads and inspect fiberglass supports for damage. Replace thigh supports if damaged.

(g) Remove main parachute pack and inspect for exterior damage. Return to parachute repack area if damage is observed.

(h) Remove time release mechanism and functionally test barostat. Replace barostat if altitude differs by 2,000 feet or more from previous reading.

(i) Verify freedom of motion (opening) of scissor shackle with time release mechanism removed.

(j) Using four (4) foot straight edge, verify main beam structure alignment by placing straight edge against main beam inner surface. Surface to surface contact should occur. Replace seat if main beams fail this inspection.

(2) Dropped more than four (4) feet but less than eight (8) feet.

(a) Accomplish all checks of paragraph 4-5e(1) above.

(b) Replace M119 rocket motor.

(c) Accomplish time release mechanism functional tests.

(d) Accomplish drogue gun functional tests.

(e) Remove and inspect RSSK contents for damage.

(f) Operationally test all linkage for proper operation.

CAUTION

If rocket motor brackets are damaged or deformed the seat must be replaced.

(g) Remove withdrawal line from guillotine and inspect line for cut-damage from guillotine blade. Replace withdrawal line if protective sleeve has been cut through.

(3) Dropped from a height in excess of eight (8) feet.

(a) Forward M119 rocket for explosive ordnance disposal.

(b) Remove drogue parachute assembly excluding the hardshell container, and forward to repack facility for inspection and reuse.

(c) Remove main parachute pack assembly and forward to repack facility for inspection and re-use.

(d) Remove survival kit contents from RSSK and inspect for subsequent use in replacement ejection seat.

NOTE

The RSSK (complete with contents bag), drop line and fry pan are to remain with the ejection seat as an assembly.

(e) Replace with a serviceable assembly.

NOTE

Place unserviceable ejection seat in the crate received and tag the unserviceable "dropped in excess of eight (8) feet."

(f) Package ejection seat records with damaged seat.

4-6. *One-Hundred Eighty Day Inspection.*

NOTE

A 10-day maximum free period may be utilized before deducting from the next scheduled ejection seat inspection cycle in the event aircraft maintenance actions prevent timely installation. If held in an area away from normal seat maintenance, a suitable covering and all safety pins shall be utilized.

Perform 180-day inspection as follows:

*a. **Cartridge and Rocket Motor Expiration Date Inspection.*** Check all cartridges and rocket motor for expiration date. If new cartridges or rocket motors are to be installed, mark each item with expiration date and ejection seat serial number in black permanent marking ink. Enter expiration and installation dates on applicable DA Form 2408-18. Cartridges and rocket motors with less than 180 days service life remaining must be replaced with serviceable items, or the next scheduled seat inspection must be adjusted to correspond with the remaining life of installed explosives.

*b. **Functional Check of Manual Override System.***

WARNING

Ensure that guillotine cartridge has been removed from guillotine breech initiator.

(1) Position manual override handle (7, figure 2-1) in its down (locked) position.

(2) Ensure that spring-loaded leg restraint cord lock release handle (6) is in its forward position.

(3) Ensure loop straps lugs are inserted in harness lock of the inertia reel mechanism.

(4) Ensure that the rigid seat survival kit restraint lugs are locked to the seat bucket.

(5) Ensure leg restraint cords (2, figure 1-8) are retained by cord lock fittings (6).

(6) Ensure that the face blind locking mechanism latch is in the down or unlocked position.

(7) Ensure that the lower firing handle safety is in the down or unlocked position.

(8) Install manual override link rod in guillotine initiator sear.

(9) Slowly move manual override handle (7, figure 2-1) to up (unlocked) position.

NOTE

The following events should occur in the order listed or adjustment of the initiator link rod lower adjustment rod tube will be required.

(a) Guillotine initiator sear should be withdrawn from its firing mechanism.

(b) Leg restraint cords should release from leg restraint cord locks.

(c) Survival kit rigid seat restraint lugs should be released from the seat bucket.

(d) Loop straps lugs should release from harness lock mechanism.

(e) Upper and lower firing handles should lock.

NOTE

The upper and lower firing handles do not have to lock in any given sequence. This function is satisfactory if the two handles are locked when the manual override handle is in the full up (unlocked) position.

(10) If retention points do not release in sequence, refer to paragraphs 4-15b and 5-18.

*c. **Function Check of Sticker Strap Spring Clip.***

(1) Push sticker strap lugs into their respective spring clips on each side of the ejection seat.

(2) Attach a spring scale into strap end of sticker strap lugs and pull on spring scale, noting spring scale reading, until each sticker strap lug releases from spring clips. Release tension shall be 35 ± 15 pounds. (See figure 4-17.)

(3) If release tension is not within tolerance, refer to paragraph 5-28c for corrective action.

d. Removal of Time Release Mechanism.

(1) Ensure that time release mechanism is cocked.

WARNING

Keep hands clear of area below time release mechanism plungers. Plungers extend with great force.

(2) Disconnect bungee from time release mechanism trip rod (2, figure 4-7).

(3) Carefully support time release mechanism and remove three nuts and three washers from mounting studs.

CAUTION

Use caution when removing time release mechanism to prevent bending the upper plunger rod in the scissor release plunger housing.

(4) Slide time release mechanism down while turning it outward, only as much as necessary, until upper plunger rod is clear of guard and guide tubes.

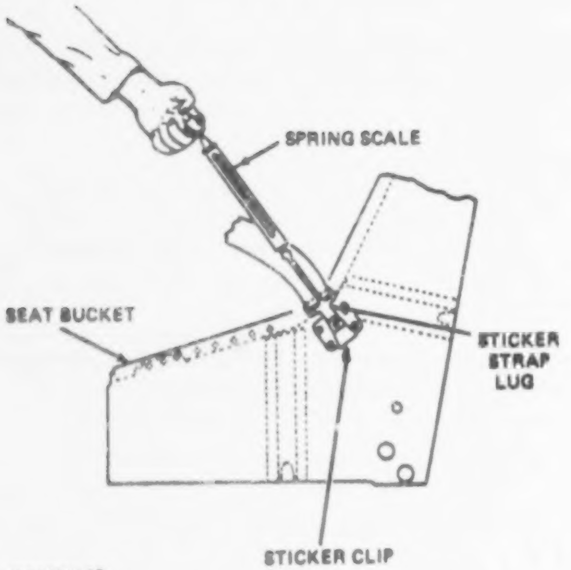


Figure 4-17. Sticker strap spring clip check

e. Removal of Drogue Gun.

(1) Remove bungee (16, figure 4-3) from drogue gun/TCR cable trip rod (11).

(2) Ensure that special shackle has been removed from drogue projectile.

(3) Remove drogue gun barrel (5) from body (8) which was left handtight and ensure cartridge has been removed. Reinstall barrel handtight.

NOTE

If drogue gun barrel is not handtight, refer to paragraph 4-3*b*.

(4) Disconnect TCR cable (15) from lower end of drogue gun/TCR cable trip rod (11) by removing cotter pin, flathead pin (12).

(5) Remove nuts and washers (7) from studs (6) in seat securing drogue gun and pull drogue gun outboard to remove from studs (6) and seat.

f. Removal of Personnel Parachute Container.

(1) Position manual override handle to up (unlocked) position and pull out loop strap (3, figure 1-7). Disconnect parachute roller yokes (4).

(2) Remove the personnel parachute withdrawal line from the shackle at the scissor on top of the seat.

(3) Pull the withdrawal line retaining pins from both sides of the head box releasing the personnel parachute restraint straps.

(4) Remove the withdrawal line from the guillotine cutter head assembly by pulling the yellow guard outboard from the seat.

(5) Remove restraint straps from spreaders at central support bracket.

CAUTION

Caution should be taken when transporting parachutes between maintenance activities to insure damage does not occur. Consult TM 10-1670-201-23, Chapter 4, for shipment requirements.

(6) Lift personnel parachute container (6, figure 1-2) from ejection seat; forward personnel parachute pack to parachute support facility.

NOTE

When cross-servicing the personnel parachute and drogue parachute systems, ensure inspection, maintenance, and repack procedures are performed in accordance with TM 10-1670-250-20

g. Removal of Rigid Seat Survival Kit (RSSK).

NOTE

Ensure that guillotine has been disarmed.

(1) Remove seat, back, and thigh support cushions.

(2) Position manual override handle to up (unlocked) position.

(3) Pull up on retention strap (8, figure 1-2) and forward portion of seat pan to remove RSSK from seat bucket.

h. Removal of Drogue Parachute Hardshell Container.

(1) Withdraw upper (thick) cable through pocket on flap of drogue parachute hardshell container.

(2) Ensure that special shackle nut and bolt are gertight.

(3) Remove screw, spacer washer, washer, lock washer and nut from each side of drogue parachute container and lift hardshell container from ejection seat, using lift loops on outer edges of hardshell container.

(4) Dispatch drogue parachute and hardshell container assembly to parachute support facility for appropriate action.

(5) Loosely install hardware removed from hardshell container installation into ejection seat head box holes to preclude loss.

i. Removal of Emergency Oxygen Cylinder.

(1) Disconnect oxygen cylinder (13, figure 1-9) from oxygen linkage by removing quick-release pin (25) that secure cable link (29) to bellcrank (24).

(2) Disconnect oxygen hose (6) from oxygen quick-disconnect bridle and lanyard (5) by pulling on the bridle.

(3) Loosen adjusting nut (14), open clamp (1), and lift oxygen assembly out of oxygen cylinder support bracket (11).

j. Functional Check of Face Blind and Locking System.

WARNING

The operational check of the face blind should only be accomplished when the ejection seat has been disarmed.

(1) Remove face blind locking mechanism safety pin.

(2) Check that face blind cannot be pulled from its receptacle with locking mechanism in up (locked) position.

(3) Position face blind locking mechanism in down nlocked) position. Grasp face blind handle and pull face nd to its full extension.

(4) Check that spring-loaded locking plungers of ace blind handle release smoothly from their receptacle.

(5) Check firing cable extension for freedom from binding and retention of face blind restraint strap by link line quick-release pins.

(6) While holding face blind handle at full extension, check that each locking plunger retracts fully.

(7) Deleted.

(8) Check for general condition, signs of wear, fraying, or corrosion of metallic parts.

(9) With face blind fully extended, the upper firing cable must withdraw the primary firing mechanism sear.

(10) Inspect firing cable for kinks, broken wires, and corrosion.

(11) Ensure upper firing (thick) cable is securely attached to face blind.

(12) Face blinds and locking mechanisms which do not meet this criteria must be replaced. (Refer to paragraph 5-6.)

k. Drogue Gun Inspection.

NOTE

If one year requirements defined in paragraph 4-7 are due, accomplish at this time.

(1) Remove drogue gun barrel.

(2) Perform a firing pin protrusion check on the drogue gun as follows:

(a) Pull trip rod (11, figure 4-3) to unlock drogue gun.

(b) Install drogue gun body on holding tool, Part No. 105GT1027.

(c) Check firing pin protrusion using firing pin protrusion tool, Part No. 105GT1029. Firing pin must protrude 0.109 (+0.031, -0.015) inch. (See figure 4-18.)

(3) Perform a firing spring compression check on the drogue gun as follows:

(a) Install drogue gun on holding tool, Part No. 105GT1027, and mount holding tool securely in a vise.

(b) Remove access bolt from end plug (6, figure 4-19).

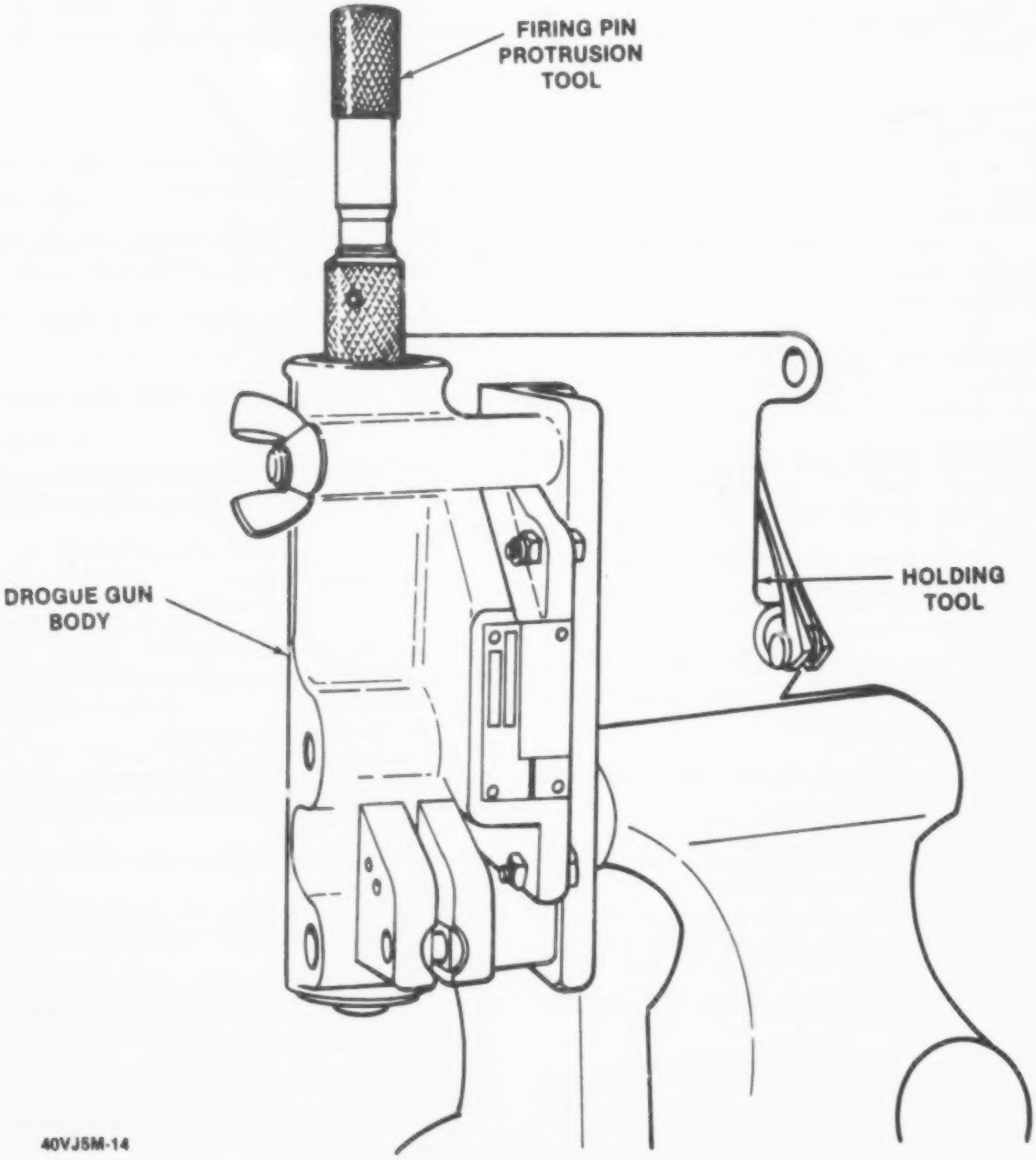
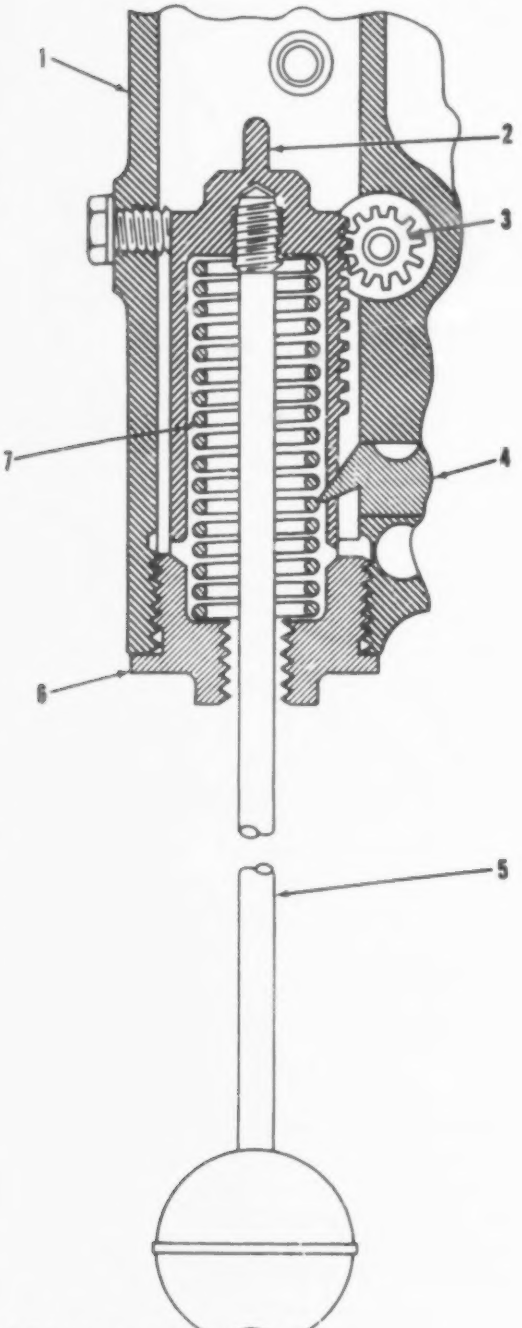


Figure 4-18. Drogue gun firing pin protrusion check



1. FIRING BODY
2. FIRING PIN
3. RACK PINION AND SPUR
4. LOCKING PLUNGER ASSEMBLY
5. COCKING TOOL
6. END PLUG
7. FIRING SPRING

40VJ5M-15

Figure 4-19. Installing cocking tool in drogue gun

(c) Insert drogue gun cocking tool (5), Part No. MBEU/4341, into end plug hole in base of firing body (1).

(d) Carefully locate tapped hole in firing pin (2) with threaded end of cocking tool (5) by oscillating cocking tool until it can be screwed into tapped hole.

(e) Attach a spring scale to shank of cocking tool with lockwire. (See figure 4-20.)

(f) With spring scale in line with cocking tool, pull back on spring scale. The firing pin must not start to move until spring scale reads approximately 8 to 15 pounds.

NOTE

Initial firing pin movement may be detected by inserting finger in opening of drogue gun body and lightly resting finger on firing pin.

(4) Replace drogue gun if spring compression does not fall within allowable limits.

(5) Cock the drogue gun as follows:

(a) Place sear in firing body (8, figure 4-3). Lock sear in place by pushing in on locking plunger assembly (4, figure 4-19).

NOTE

The ground lock pin or tool, Part No. 105GT1044, may be used for this purpose.

(b) Ensure that locking plunger assembly (4) is properly positioned by inserting ground lock pin (9, figure 4-3) in safety pin hole.

NOTE

If ground lock pin will not enter safety pin hole, the locking plunger assembly is not in its proper position.

(c) After properly positioning locking plunger assembly (4, figure 4-19), remove ground lock pin (9, figure 4-3) from safety pin hole.

(d) Holding firing body (1, figure 4-19) firmly, pull cocking tool (5) against firing spring tension as far as possible.

(e) Relese tension on cocking tool and, after a very slight return motion (approximately 1/8 inch), firing pin will lock in the cocked position.

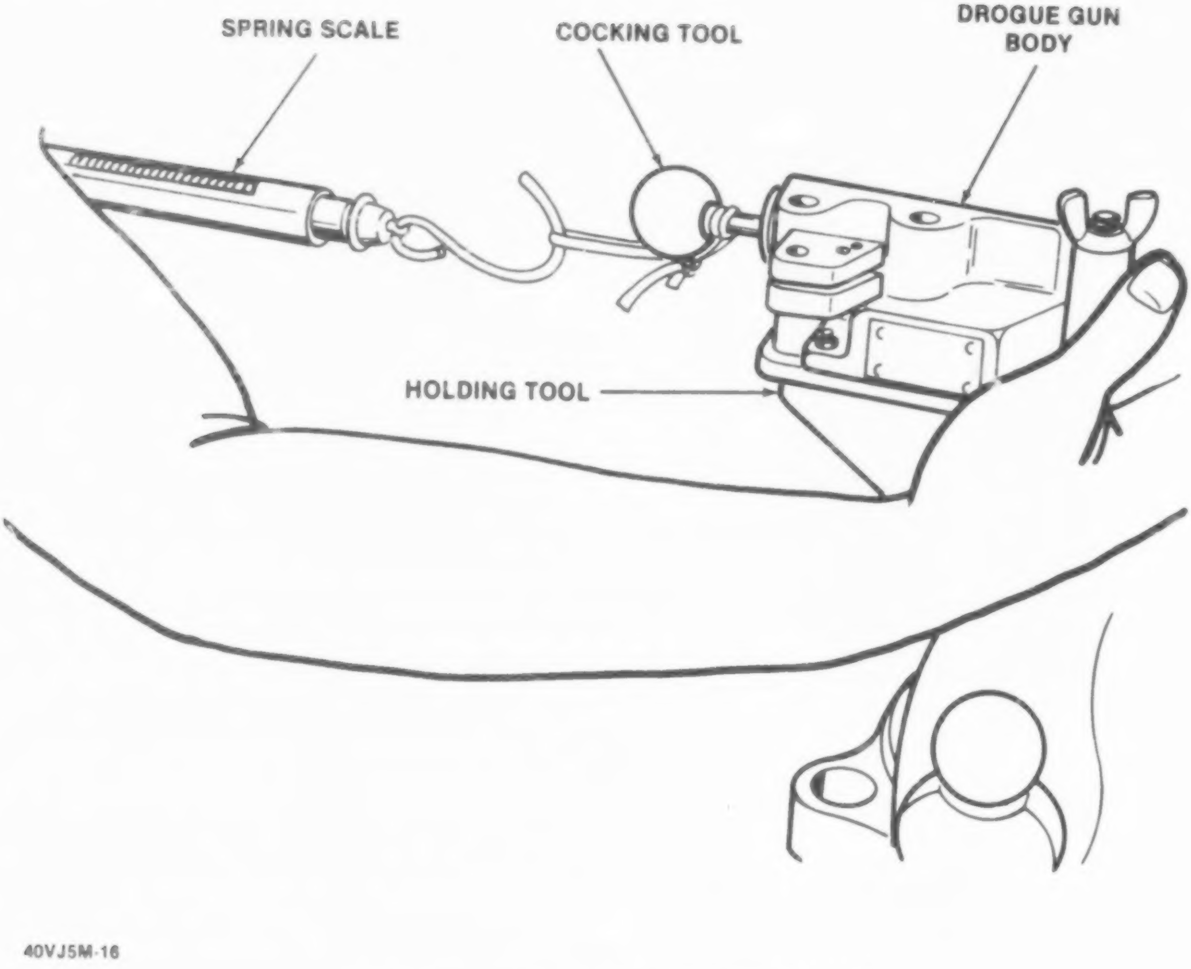


Figure 4-20. Firing pin spring compression test

NOTE

During cocking the firing mechanism must move freely (except for the spring tension), and the locking plunger assembly will raise and then lower to the locked position, holding the sear firmly in position. The escapement mechanism operation will be audible during the cocking action.

(f) Ensure firing pin does not protrude. Unscrew cocking tool and remove from tapped hole in firing body (1).

(6) Perform a drogue gun time delay check using test unit, Part No. 134GT1041-T5, holding tool, Part No. 105GT1027; and a 110-volt ac, 60 Hz power source as follows:

NOTE

Test unit, Part No. 134GT1041-T5, consists of a timing clock assembly, Part No. 134GT1041-35; a start switch assembly, Part No. 105GT1030-13; a stop switch assembly, Part No. 105GT1030-11; and a barostat adapter assembly, Part No. 105GT1030-23.

(a) Ensure drogue gun is cocked and that firing pin does not protrude.

(b) Install drogue gun on holding tool and mount holding tool securely in vise.

(c) Attach start switch assembly over locking plunger assembly. (See figure 4-21.)

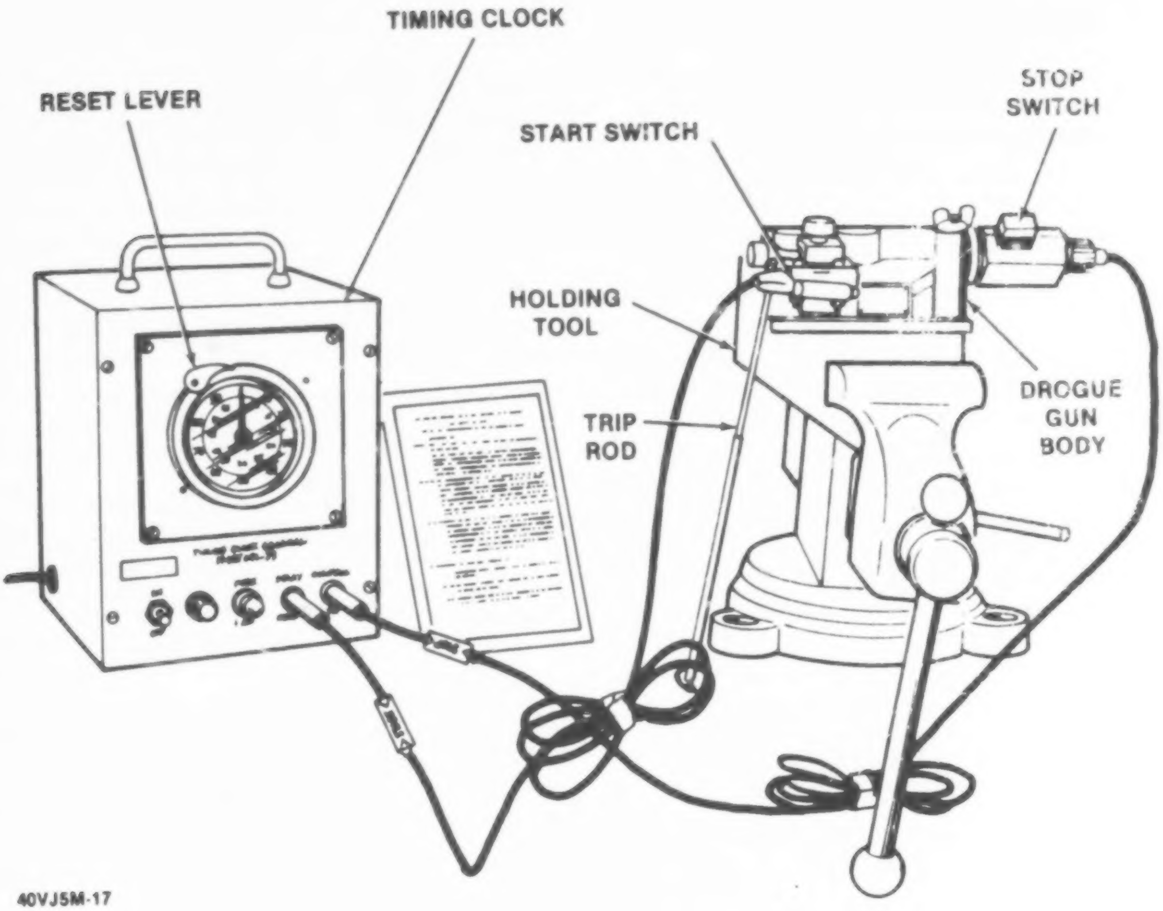


Figure 4-21. Drogue gun time delay check test setup

(d) Install stop switch assembly in firing pin end of firing body (1, figure 4-19).

(e) Insert plugs of start and stop switch assemblies into proper jacks in relay control section of timing clock assembly.

(f) Connect timing clock assembly to a 110-volt ac, 60 Hz power source.

(g) Apply power to timing clock assembly by setting toggle switch to ON. Indicator light next to toggle switch will illuminate.

NOTE

If timing clock assembly starts when toggle switch is positioned to ON, the start and stop switch assembly has been incorrectly installed or is out of adjustment.

(h) Ensure that timing clock assembly is set to zero. If necessary, depress reset lever on timing clock assembly to reset clock.

(i) Pull sear from drogue gun firing body. Timing clock assembly will start and stop.

(j) Check clock for time delay of 0.40 to 0.60 seconds on drogue gun.

(k) Repeat time delay check two additional times.

(7) If drogue gun fails to meet the time delay specified in preceding substep *(j)*, replace drogue gun.

NOTE

Prior to installing a new or newly overhauled drogue gun assembly accomplish all tests within paragraphs 4-6k(1) through 4-6k(7)(c) herein.

(a) If test was satisfactory, remove test unit and holding tool from drogue gun.

(b) Recock the drogue gun.

CAUTION

Ensure that the cocking tool is pulled full back as noted by the 1/8 over travel and audible gear movement.

(c) Install access bolt into end plug (6, figure 4-19.)

i. Time Release Mechanism Inspection.

(1) *Time release mechanism time delay operational test.*

(a) Mount time release mechanism on holding tool, Part No. 105GT1027, and secure holding tool in a vise with the time release mechanism in a horizontal position.

CAUTION

Do not allow harness release plunger to extend during timing tests; only the rack plunger need extend. Damage to the timing mechanism can result if this procedure is not followed.

(b) Uncock the time release mechanism.

(c) Using test unit, Part No. 134GT1041-T5, install time release start and stop switch assembly on time release mechanism and secure with knurled knob. (See figure 4-22.)

NOTE

Test unit, Part No. 134GT1041-T5, consists of a timing clock assembly, Part No. 134GT1041-35, and a start and stop switch assembly, Part No. 105GT1031-21.

(d) Connect plugs of start and stop switch assembly to their respective jacks on relay control section of timing clock assembly.

(e) Connect timing clock assembly to a 110-volt ac, 60 Hz power source, and position toggle switch to ON position. Indicator light next to toggle switch will illuminate.

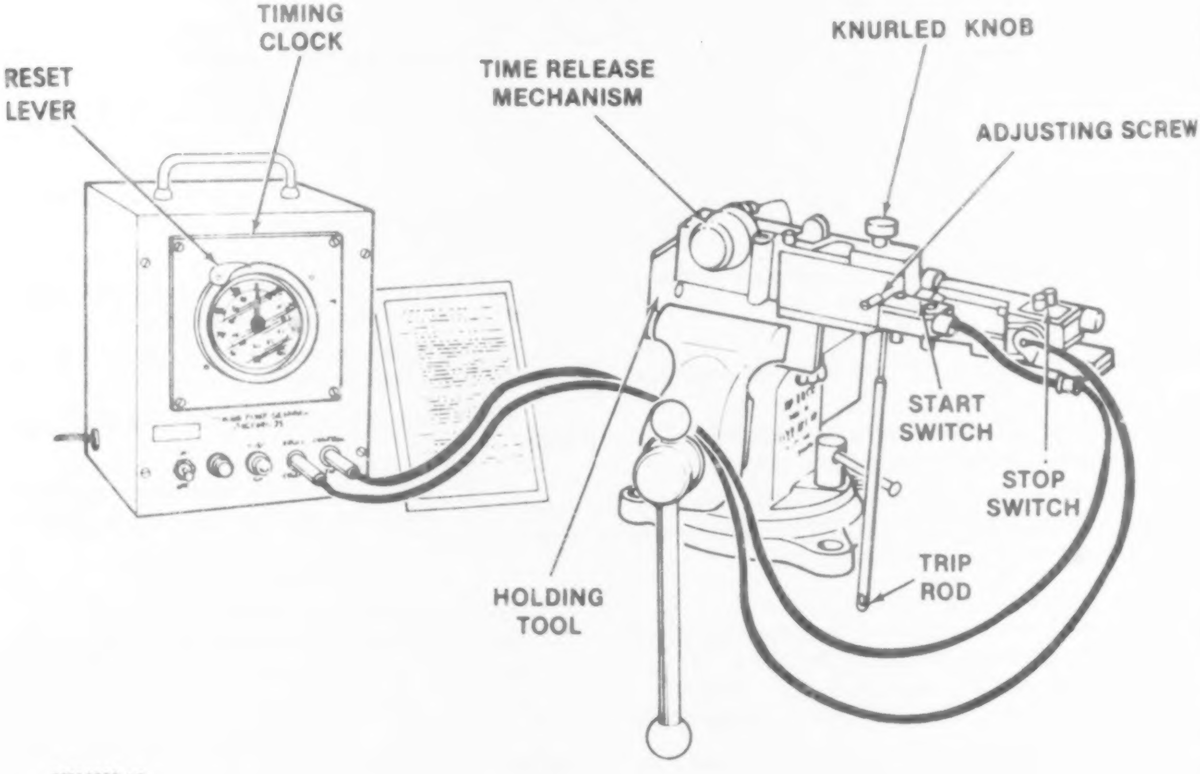


Figure 4-22. Time release mechanism time delay test setup

NOTE

If timing clock assembly starts when toggle switch is positioned to ON, the start and stop switch assembly has been incorrectly installed or is out of adjustment.

(f) Ensure timing clock indicates zero. If necessary, depress reset lever on timing clock assembly to reset clock.

(g) Accomplish the following procedures to make a coarse adjustment on the start and stop switch assembly:

1. Manually depress start switch and adjust stop switch until timing clock stops.

NOTE

Cock only the rack plunger.

2. Insert sear and cock time release mechanism using cocking tool.

3. Adjust start switch by loosening thumbscrew and move start switch in until timing clock assembly runs.

4. Move start switch out until timing clock assembly stops. Tighten thumbscrew.

5. Depress reset lever on timing clock assembly to reset clock to zero.

(h) Accomplish the following procedure to make a fine adjustment on the start switch assembly:

1. Screw out adjusting screw until timing clock assembly runs.

2. Screw in adjusting screw until timing clock assembly stops.

3. Depress reset lever on timing clock assembly to reset clock to zero.

(2) ***Time release mechanism test procedure.***

(a) Grasp trip rod of time release mechanism and pull sear. Rack plunger will extend and timing clock assembly should start and stop.

(b) Check clock for time delay of 1.65 to 1.85 seconds.

(c) Recock time release mechanism, recheck installation of start and stop switch assembly, and repeat preceding substeps *(a)* and *(b)* two more times. Replace any time release mechanism that does not meet the specified time requirements.

NOTE

Prior to installing a new or newly overhauled time release mechanism accomplish all tests within paragraphs 4-61(1) through 4-61(3)(k) herein.

(d) Position toggle switch of timing clock assembly OFF. Cock both plungers of the time release mechanism and remove start and stop switch assembly from time release mechanism.

NOTE

Do not remove time release mechanism from holding tool as it is required during the barostat operational check.

(e) With both plungers cocked, check freedom of movement of the plungers by pressing inward. The rack plunger should retract and return to the locked position with an audible gear movement (whirring) sound. The harness release plunger, being spring-loaded, should retract and extend without binding.

NOTE

There should be approximately 1/4-inch of travel of the rack plunger, and 1/2-inch travel on the harness release plunger.

(3) ***Barostat check procedures.*** Barostat operational check of time release mechanisms incorporating a standard barostat assembly (MBEU690J5).

NOTE

These procedures apply to use of the barostat adapter assembly (P/N 105GT1030-23) with separate vacuum source and altimeter.

(a) Ensure time release mechanism is cocked.

(b) Remove lockwire and lead seal from barostat assembly.

(c) Install barostat adapter assembly, Part No. 105GT1030-23, over time release mechanism barostat assembly. (See figure 4-23.)

NOTE

Ensure barostat adapter assembly is securely held to barostat assembly by retainer clips.

WARNING

A barostat which exhibits a 2,000 feet or more change (decrease in altitude) from that previously recorded shall be replaced with a serviceable barostat. Refer to paragraph 5-23.

(i) Recock time release mechanism and repeat preceding substeps *(e)* through *(h)* two more times.

NOTE

Do not cock harness release plunger.

NOTE

A barostat that does not operate at the prescribed altitude may be adjusted in accordance with paragraph 5-23(h).

(j) Remove barostat adapter assembly from barostat assembly. Recock both plungers on time release mechanism.

(k) Secure serviceable barostat assembly with lockwire and lead seal (items 1 and 3, table 1-2).

(4) Barostat check procedures utilizing vacuum test box (TDO1153). Barostat operational check of time release mechanisms incorporating a standard barostat assembly (MBEU690J5).

(a) Lift cover of test box and check inner area for dirt and contamination, clean as required.

(b) Check lid seal for damage and wipe with a clean lint free cloth to remove

(c) Remove trip rod and sear from time release mechanism to be tested.

CAUTION

Before installing time release mechanism, ensure barostat adjustment screw driver mechanism and test box firing control are fully withdrawn.

(d) Insert time release mechanism into vacuum test box, locating it on the two mounting pins, and secure in position with clamp. Tighten clamp nut securely using spanner wrench provided.

CAUTION

Only the time release RACK plunger (SHORT) shall be cocked to perform this test.

(e) Fully insert the special firing pin attached to the firing cable and cock the RACK PLUNGER only using the cocking tool.

(f) Lower the vacuum box lid down onto the mating surface making sure the seal uniform makes contact.

(g) Adjust altimeter to read standard "sea level" (29.92 INCHES OR 1013 MILLIBARS) to assure all test results are independent of elevations and/or field elevations.

CAUTION

Do not use force when closing the air admittance valve to preclude damaging the seal.

(h) Move the ON/OFF switch to ON and verify the red indicator light illuminates and the vacuum motor starts.

(i) Apply a moderate hand pressure to top of lid and carefully close air admittance valve. Observe that altimeter begins recording an increase in altitude.

(j) Allow vacuum motor to run until an altitude reading of 25,000 to 30,000 feet is attained, and then turn switch OFF.

NOTE

When vacuum motor is turned OFF the altimeter may fluctuate momentarily. If altitude continues to decrease, the lid seal is most likely upset, or a test box control seal may be worn.

(k) Hold at this altitude for approximately one minute and remove time release mechanism gear by depressing the firing control knob. At this point the time release must not operate.

(l) Slowly open the air admittance valve by rotating counter clockwise until the altimeter shows a steady fall of 200 feet per second (MAXIMUM), and note the altitude at which the time release mechanism begins to operate.

NOTE

Time release mechanism operation is noted by an audible operation of the gearing and visible movement of the RACK PLUNGER.

(m) Record the altitude at which time release mechanism operation began. The altitude reading at the first motion shall be 14,500 feet plus or minus 500 feet.

WARNING

A barostat which exhibits a 2,000 feet or more change (decrease in altitude) from that previously recorded shall be replaced with a serviceable barostat. Refer to paragraph 5-23.

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(n) Evacuate the vacuum chamber by opening the air admittance valve and repeat this test two more times.

CAUTION

When evacuating the vacuum changer, do not exceed 1,000 feet per second decrease in altitude to prevent damage to altimeter.

(o) A barostat that does not operate at the prescribed altitude may be adjusted in accordance with paragraph 5-23(h).

(p) Remove serviceable time release mechanism from vacuum test chamber and cock both plungers for installation on ejection seat.

NOTE

Record altitude reading for time release mechanism by serial number for subsequent test reviews.

m. Primary Firing Mechanism Inspection.

(1) Remove primary firing mechanism from ejection gun.

(2) Using firing pin cocking tool, Part No. MBEU/1321, remove firing pin sear. (See figure 4-24.)

(3) Ensure that firing pin sear moves freely in firing pin slot.

(4) Place firing pin sear on a flat surface and inspect for deformation.

NOTE

If the firing pin sear is bent or cracked, replacement is required.

(5) Check initial compression of primary firing mechanism spring using a spring scale attached to firing pin cocking tool. Firing pin must not move until a load of at least 8 pounds is applied.

CAUTION

Do not attempt to alter spring tension by adding or removing washers.

(6) Check firing pin protrusion with firing pin protrusion tool, Part No. 105GT1029. The pin protrusion should be 0.109 (+0.030, -0.015) inch. (See figure 4-25.) If firing pin does not protrude to the above dimensions, refer to paragraph 5-3.

(a) Deleted.

(b) Deleted.

(c) Deleted.

(e) Deleted.

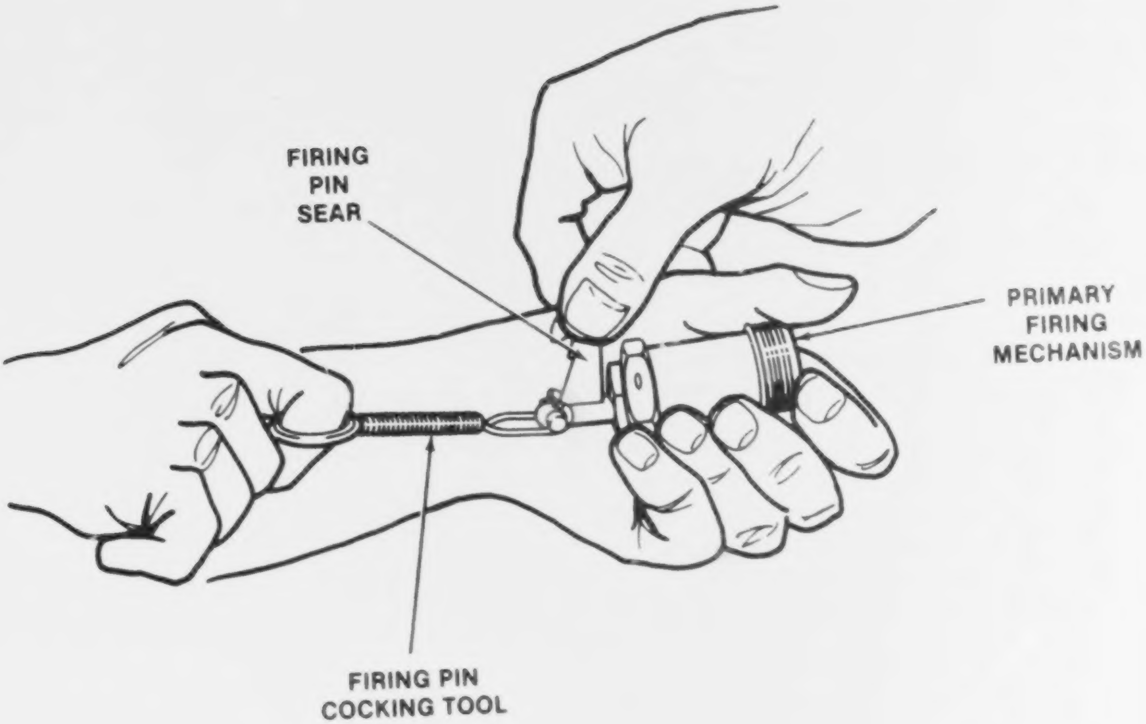
(f) Deleted.

n. Ejection Gun Inspection.

CAUTION

No lubricant should be present or be applied to guide rails. Guide rails should always be kept clean and dry.

(1) Inspect ejection gun guide rails (5, figure 4-26) for scoring, gouges, and cleanliness.



40VJ5M-20

Figure 4-24. Removing firing pin sear from primary firing mechanism

CAUTION

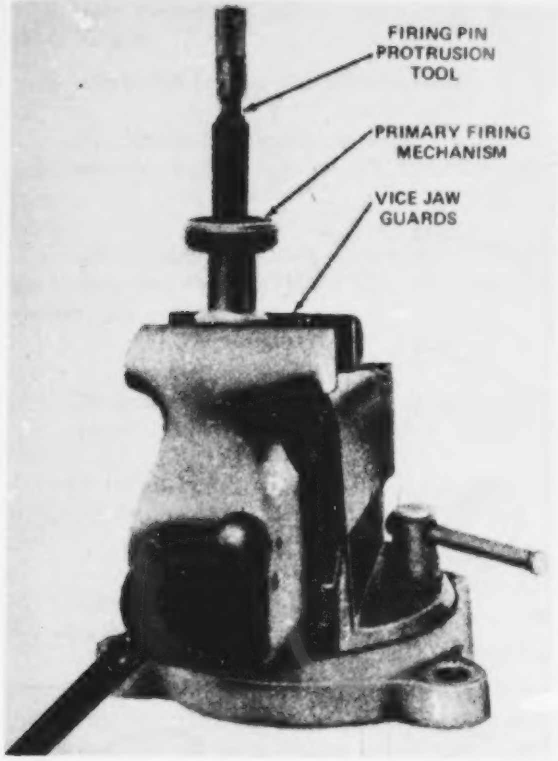
Mounting blocks must be placed around the thick end of the cylinder barrel to prevent possible damage to the ejection gun.

(2) Mount ejection gun in vise using ejection gun clamp mounting blocks, Part No. MBEU/8463. (See figure 4-27.)

CAUTION

Do not attempt to separate the inner tube from the intermediate tube. They are restricted from separating by the inner tube guide bushing, which is riveted to the top of the intermediate tube. Use extreme care to prevent shearing of these rivets during servicing. If a rivet is sheared, replace the entire ejection gun assembly.

(3) Extend ejection gun inner and intermediate tubes to their full extension.



40VJ5M-21

Figure 4-25. Checking firing pin protrusion

(4) Clean ejection gun inner and intermediate tubes with clean, lint-free cloth moistened with lubricating oil (item 2, table 1-2).

NOTE

Drycleaning solvent (item 6, table 1-2) is not a suitable or authorized cleaning agent and shall not be used.

(5) Inspect the ejection gun as follows:

(a) Inspect entire ejection gun for visible damage and for corrosion.

(b) Inspect primary cartridge breech O-ring for damage and deterioration.

(c) Inspect ejection gun interior for oil and moisture accumulations.

NOTE

If contamination is present, clean ejection gun. (Refer to paragraph 5-2c.)

(6) Lubricate the ejection gun as follows:

WARNING

Excessive lubrication of the ejection gun inner and intermediate tubes can dampen the effect of the primary charge.

(a) Lubricate inner and intermediate tubes with lubricating oil (item 2, table 1-2).

(b) Lubricate primary cartridge breech O-ring with grease (item 5, table 1-2).

(7) Compress (retract) ejection gun inner and intermediate tubes into cylinder barrel and install ejection gun auxiliary cartridges as follows:

WARNING

Do not use plastic separators (provided in the cartridge shipping container) as gas sealers. Use of plastic separators will result in ejection gun malfunction.

(a) Inspect auxiliary cartridges for damage around flange edges and for corrosion.

(b) Insert new seal in lower auxiliary cartridge chamber and insert auxiliary cartridge, Part No. MBEU/29231, flat side inboard.

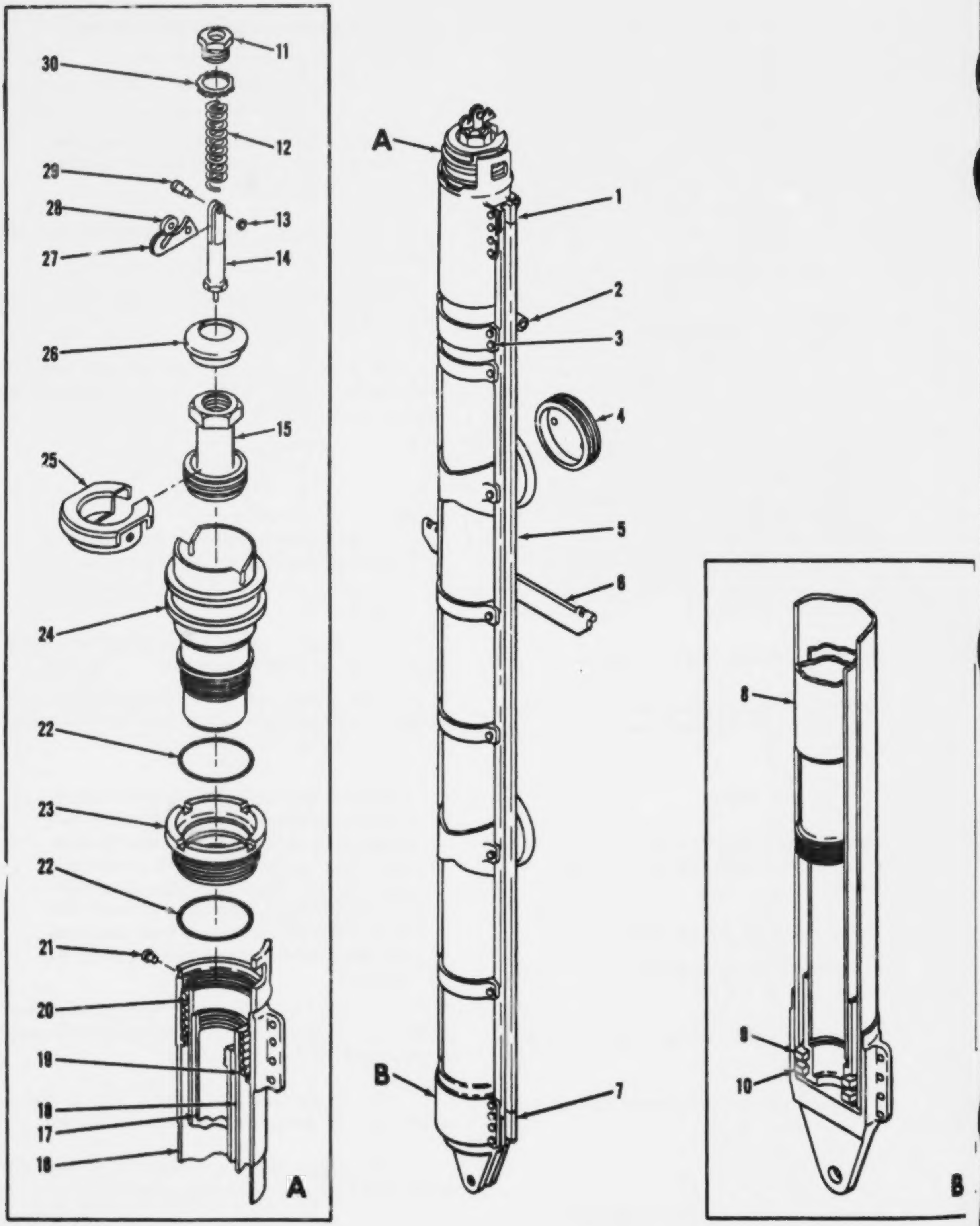
NOTE

Check all cartridges for expiration date. If new cartridges are installed, mark cartridge with expiration date and ejection seat serial number in black permanent marking ink. Enter cartridge expiration and installation dates on applicable DA Form 2408-18. Cartridges with less than 180 days service life remaining shall be replaced.

(c) Screw on auxiliary cartridge chamber cap and tighten to a torque of 300 to 550 inch-pounds using spanner wrench, Part No. 128GT10155.

(d) Secure auxiliary chamber cap to lower auxiliary cartridge chamber with lockwire and lead seal.

(e) Repeat preceding substeps (*b*) through (*d*) for installation of the upper auxiliary cartridge.



40VJ5M-22-1

Figure 4-26. Ejection gun – exploded view (Sheet 1 of 2)

(10) Ensure that guillotine initiator (8) is secured to seat bucket.

p. Guillotine Initiator Firing Pin Inspection.

(1) Ensure that guillotine initiator was disarmed when seat was removed from aircraft. Refer to paragraph 4-3e.

(2) Remove link rod (6, figure 4-28) by using firing pin cocking tool, Part No. MBEU/1321, and remove firing pin sear (12).

NOTE

The firing pin sear must move freely in firing pin slot.

(3) Place firing pin sear on flat surface and inspect for deformation.

NOTE

Replace firing pin sear if it is bent or cracked.

(4) Check initial compression of guillotine initiator firing mechanism (13) spring by securing mechanism into padded vice jaws and using a spring scale attached to firing pin cocking tool. Firing pin must not move until a load of at least 8 pounds is applied.

NOTE

Plunger should be flush or slightly protruded.

(5) Check firing pin protrusion with firing pin protrusion tool J9126 by inserting tool into guillotine cartridge breech (6, figure 4-29). If firing pin does not cause gage plunger to be flush or protrude slightly, proceed as follows:

(a) Remove firing pin assembly by bending down tabs of tab washer (2) that secures retaining collar (3).

(b) Remove retaining collar (3), tab washer (2), firing pin spring (4), and firing pin (5).

(c) Inspect firing pin for burrs and bending.

(d) Clean cartridge breech with dry, filtered, compressed air to remove possible foreign matter.

(e) Lubricate firing pin with a light coat of lubricating oil (item 2, table 1-2).

(f) Screw retaining collar (3) into guillotine cartridge breech (6).

(g) Bend tab to make contact with flat surface of guillotine cartridge breech (6).

(h) The tab to be bent flat on the guillotine cartridge breech should be opposite tab engaged in retaining collar slot.

(i) Repeat preceding substeps (*a*) through (*h*). If the pin does not extend the required amount, replace the firing mechanism.

(j) Install right thigh support with screws and replace padding by pressing down firmly.

q. TCR Motor (M119) and Cable Dispenser Inspection.

(1) Inspect TCR cable dispenser (2, figure 4-30) for secure installation on seat.

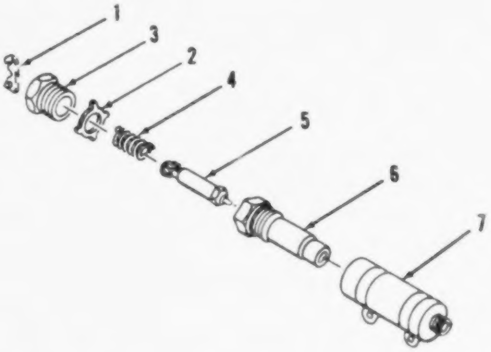
(2) Inspect visible dispenser cable (3) for kinks, nicks, or fraying.

(3) Inspect TCR motor cable conduit (1) for sufficient slack, kinks, gouges, and security to seat.

CAUTION

The TCR cable conduit must have a generous loop coming out of dispenser and a loop approximately 7 to 7-1/2 inches at the motor to assure free cable travel.

(4) Inspect TCR initiator cable small connector for security of lockwire at TCR dispenser housing and large connector for security of lockwire at TCR motor initiator.

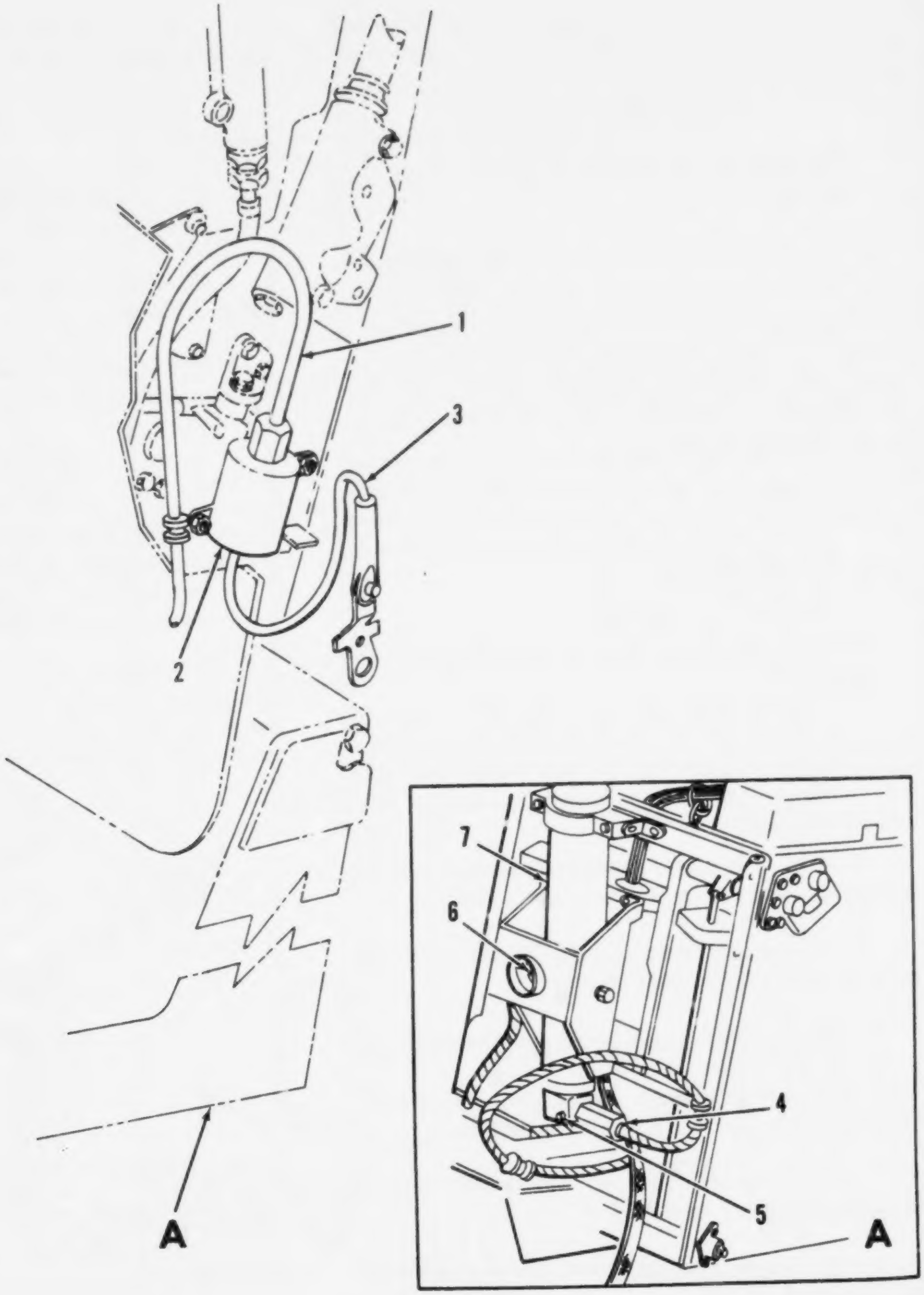


1. FIRING PIN SEAR
2. TAB WASHER
3. RETAINING COLLAR
4. FIRING PIN SPRING
5. FIRING PIN
6. GUILLOTINE CARTRIDGE BREECH
7. GUILLOTINE INITIATOR HOUSING

40VJ5M-25

Figure 4-29. Guillotine initiator – exploded view

1. TCR MOTOR CABLE CONDUIT
2. TCR CABLE DISPENSER
3. DISPENSER CABLE
4. TCR MOTOR CABLE CONNECTOR
5. SAFETY PIN RECEPTACLE
6. BRACKET
7. TCR MOTOR (M119)



40VJ5M-26

Figure 4-30. TCR motor and cable dispenser inspection

(5) Inspect TCR motor (7) for security of installation. TCR motor nozzle must be seen through bracket (6) hole, and be free of obstruction.

(6) Ensure safety lock streamer (134SEME10054) is installed.

(7) Inspect TCR motor (M119) for expiration of installed life.

r. Slipper Alignment and Calibration Check.

NOTE

Although the ejection gun and ejection seat are individually replaceable, the calibration check should be accomplished on mated ejection guns and ejection seats to preclude unnecessary removal of main beam material. If replacement of ejection gun and ejection seat is necessary, reidentification to mated assemblies (by identification number) should be accomplished in accordance with paragraph 5-32 before installation.

(1) Remove ejection seat from seat cradle and support ejection seat using hoisting sling, Part No. 105GT1024-33, and a suitable hoist.

CAUTION

Do not attempt to remove slipper material. Removal of material could result in ejection seat failure during ejection or crash landing.

(2) Inspect slippers for evidence of corrosion or metal burrs. Replace defective slippers.

(3) Perform slipper calibration check as follows:

(a) Using an outside micrometer, measure the distance across inserts (1, figure 4-26) at top of ejection gun. Record this reading.

(b) Tighten top slippers in main beam to proper torque (50 to 60 inch-pounds). Using an inside micrometer, measure the distance between top slippers at point of minimum dimension.

(c) Compare ejection gun and slipper readings, and adjust as necessary, using either of the following methods:

CAUTION

Maximum allowable spot face of main beam material for middle and top slippers is 0.050 inch each beam. MAximum allowable spot face of main beam material for lower slippers is 0.010 inch each beam. The left and right beams must be spot-faced an equal amount.

1. Insufficient clearance. Remove top slippers from main beam. Remove necessary shims (if any) and use spot-facing tool, Part No. 134XM15499 or TDO/742, to spot-face slipper attachment holes on inside of main beam until a micrometer reading of 0.001 to 0.006 inch is established between ejection gun and slippers.

2. Excessive clearance. If the clearance exceeds 0.006 inch, install shims between slippers and inside face of each beam.

NOTE

Install equal thickness of shims between each slipper and inside face of each main beam.

(d) Repeat preceding substeps *(a)* through *(c)* for the center and bottom set of slippers. The clearance must be as follows:

NOTE

The outside diameter of the ejection gun must be measured where the slippers mate with the ejection gun.

1. Middle slippers: 0.010 to 0.012 inch.

2. Bottom slippers: 0.000 to 0.005 inch.

CAUTION

Ensure that locating pin slot of the ejection gun inner barrel aligns with the main beam locating pin.

(e) Install ejection gun onto slippers of the ejection seat.

NOTE

When the preceding substeps have been accomplished, it should be possible to remove ejection gun by hand. If seat still binds, reposition upper or lower slipper shims to the side opposite the binding. Under this condition, equal number of shims per side cannot be maintained.

(4) Perform slipper alignment as follows:

(a) Check slipper alignment on main beams by placing an accurate 4 foot straightedge against the sides of the top and lower slippers. Both slippers must contact the straightedge completely. (Refer to fig. 4-31.)

(b) Align misaligned slippers as follows:

1. Loosen slipper locking nut slightly and tap misaligned slipper in proper direction with a soft fiber or plastic mallet until slipper is in alignment.

2. Tighten all slipper attaching nuts to a torque of 50 to 60 inch-pounds.

NOTE

Misaligned slippers will cause difficulty in aligning ejection seat on ejection gun guide rails.

s. *Scissor Rotational Force Check.*

(1) Ensure scissor is resting on scissor shackle buffer stop.

(2) Connect a suitable spring scale to scissor shackle.

(3) Pull on spring scale, noting force required to rotate scissor to a parallel position with the main beams. Spring scale must be maintained at 90 degrees to the scissors during this test. (See figure 4-32.)

NOTE

Spring scale reading shall be between 5 to 25 pounds. If spring scale reading is above or below these limits, adjustment of the scissor rotational force is required.

(4) Adjust scissor rotational force as follows:

(a) Remove scissor retaining bolts, washers, and nuts securing scissor to main beam. (See figure 4-32.)

(b) Add or subtract number of washers to increase or decrease scissor rotational force, as required.

(c) Install scissor retaining bolts, washers, and nuts securing to main beam.

(5) Verify freedom of opening of the scissor arm when the locking plunger is retracted and the scissor is rotated throughout its range of movement

WARNING

The scissor arm must not make contact with the locking plunger when plunger is fully retracted.

(6) Verify freedom of motion of the locking plunger and clean of any contaminants and/or corrosion.

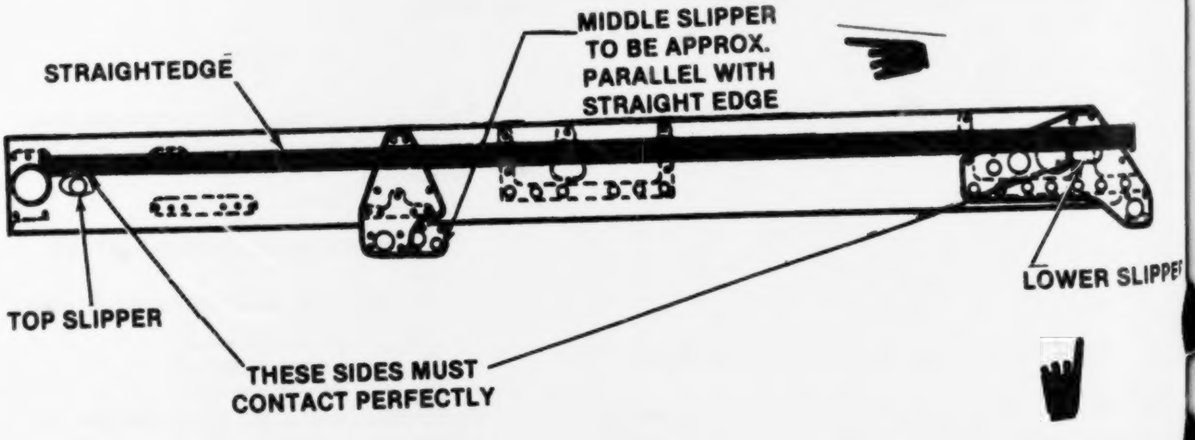


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Figure 4-31. Checking slipper alignment

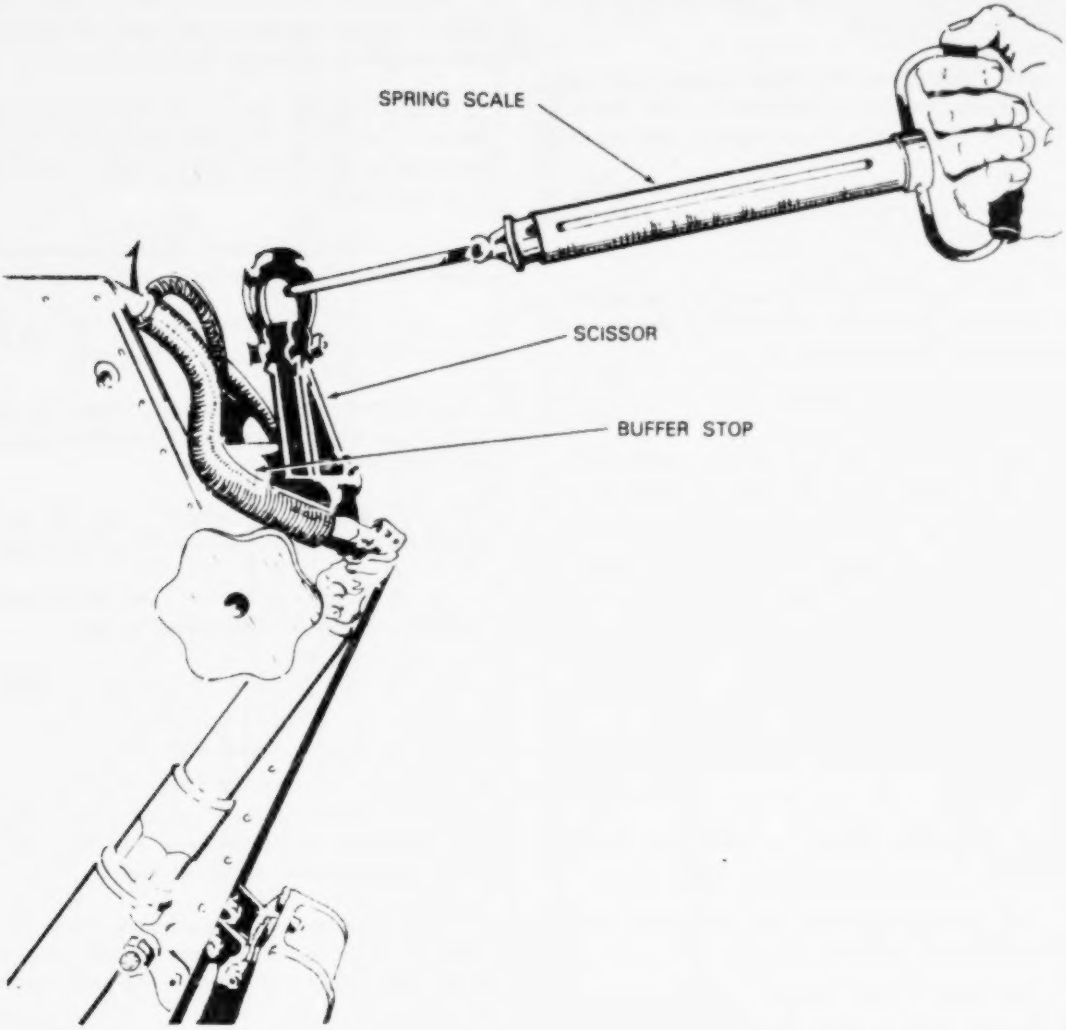


Figure 4-32. Measuring Tension of Scissor Mechanism

NOTE

Washers shall always be installed behind the bolt head and not behind the nut.

(d) Recheck scissor rotational force as outlined in preceding step (3).

t. Functional Check of Inertia Reel Mechanism.

(1) Position inertia reel manual control handle in center (autolock) position.

(2) Pull loop strap out to the farthest position. Inspect loop strap for cuts, fraying, and cleanliness.

NOTE

Frayed loop strap edges 1/8 inch maximum both sides are considered serviceable.

(3) Position inertia reel manual control handle to forward (locked) position.

(4) Slowly allow loop straps to retract a few inches at a time; then pull on loop straps to ensure that they lock. Repeat this procedure until loop straps are fully retracted.

(5) Move inertia reel manual control handle to center (autolock) position and pull on loop straps. Loop straps should be locked.

(6) Position inertia reel manual control handle to aft (unlocked) position and release handle. Handle should move to center (autolock) position.

NOTE

Inertia reel manual control handle is spring-loaded to the center (autolock) position.

(7) Position inertia reel manual control handle to aft (unlocked) position and pull loop straps out approximately 2 feet. Ensure the snubber contacts snubber stop. (See figure 4-33.) Release loop straps and inertia reel manual control handle.

(8) Pull loop straps out to their farthest position and allow loop straps to retract slowly. Loop straps should fully retract.

u. Functional Check of Dual Leg Restraint Mechanism.

(1) Ensure leg restraint cord lock release handle is in forward (locked) position.

(2) Pull on lower (aft) end (under seat bucket) of leg restraint cord (2, figure 1-8) and ensure it passes through snubber freely.

(3) Pull forward on leg restraint cord (2) and ensure that cord is held by snubber.

(4) Pull forward on leg restraint cord (2) and pull on snubber finger ring. Ensure leg restraint cord will pull out freely while snubber finger ring is held out.

NOTE

The snubber finger ring is spring-loaded and will return to the locked position when released.

(5) Insert cord lock fitting (6) on upper end of leg restraint cord (2) into leg restraint cord lock (5) in front of seat bucket. Ensure cord lock fitting is secure.

(6) Move leg restraint cord lock release handle (6, figure 2-1) to its aft (unlocked) position and ensure that upper end of leg restraint cord (2, figure 1-8) is released from cord locks.

(7) Return leg restraint cord lock release handle (6, figure 2-1) to its forward (locked) position.

(8) Perform preceding steps (1) through (7) on opposite leg restraint cord and cord lock fitting.

(9) Pull snubber finger ring (7, figure 1-8) out and pull forward on leg restraint cord (2) until it is extended to its farthest position.

(10) Inspect leg restraint cords (2) for cuts, deterioration, and fraying, and end fittings for damage.

(11) Inspect garters for cuts, deterioration and proper operation of the quick release fittings.

v. Functional Check of Lower Firing Mechanism.

WARNING

The operational check of the lower firing mechanism should only be accomplished when the ejection seat has been disarmed.

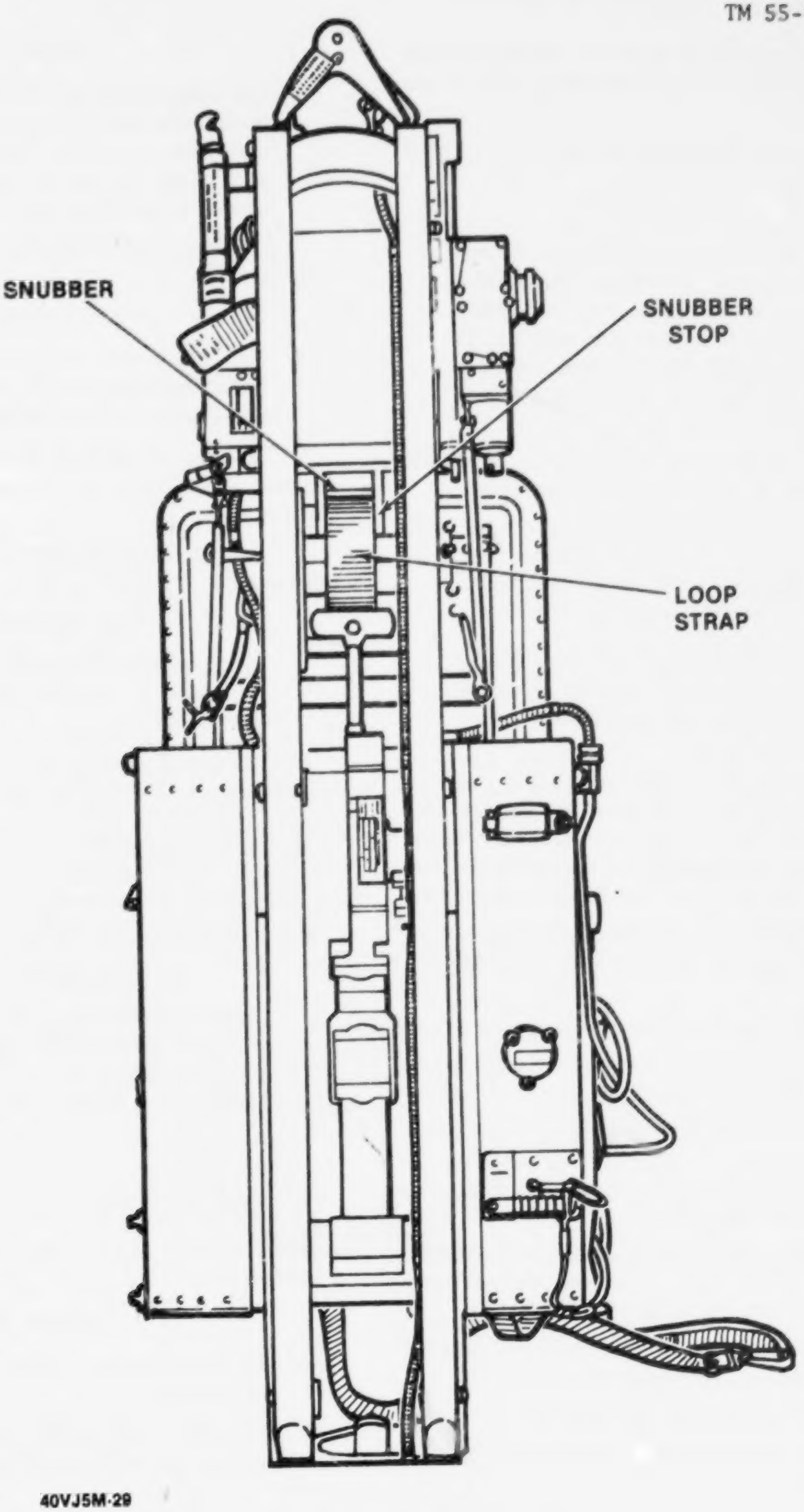
(1) Position lower firing handle safety guard (4, figure 1-8) in up (locked) position and pull upward on the lower firing handle (3). Lower firing handle should be locked.

(2) Position lower firing handle safety guard (4) in down (unlocked) position and pull upward on the lower firing handle (3). Handle should pull freely.

(3) With lower (thin) cable extended, inspect cable for kinks, broken wires, and corrosion.

CAUTION

To prevent damage to the lower firing (thin) cable, pull on ring end of lower firing cable, located at the top of the seat, to take up slack as lower firing handle is installed in its original position.



40VJ5M-29

Figure 4-33. Snubber contacting stop

(4) Install lower firing handle (3) 180 degrees from its original position and repeat preceding steps (1) and (2).

w. Maintenance Operational Check of Lower Firing Mechanism.

WARNING

Ensure that leg restraint cord lock fittings are installed in leg restraint locks, and that slack from the leg restraint cord lock release handle, when held back, does not lock the lower firing handle with the lower firing handle safety guard down, which would give an incorrect indication.

(1) Insert restraint cord lock fittings (6, figure 1-8) in their respective leg restraint cord locks (5).

(2) Position lower firing handle guard (4) in up (locked) position and pull upward on lower firing handle (3). Lower firing handle should not move.

WARNING

Slack in the restraint cord release handle must be removed to ensure proper operation of the lower firing handle locking mechanism.

(3) Position lower firing handle safety guard (4) in down (unlock) position. Move leg restraint cord lock release handle (6, figure 2-1) aft until all slack is removed. Holding back on this slack, pull upward on the lower firing handle (3, figure 1-8). Handle should pull freely.

(4) Install lower firing handle (3) 180 degrees from its original position and repeat preceding steps (1), (2), (3).

x. Functional Check of Emergency Oxygen System.

(1) Disconnect oxygen cylinder (13, figure 1-9) from oxygen linkage by removing quick-release pin (25) securing cable link (29) to bellcrank (24).

(2) Assure positive engagement of trip lever (30) to the shaft (23) by depressing lever while restricting movement of bellcrank (24).

(3) Pull manual actuating knob (2) and note movement of bellcrank (24). Bellcrank should move downward as manual actuating knob is pulled.

(4) Return manual acutating knob (2) to its original position in actuating knob support bracket (3).

y. Inspection of Ejection Seat Structure.

(1) Inspect seat structure for evidence of corrosion and cleanliness.

NOTE

The exterior seat surfaces and interior seat bucket area should be thoroughly cleaned during this inspection. The overall appearance of the ejection has an effect on the user's confidence in the escape system.

(2) Check all accessible cotter pins for security and condition.

WARNING

Only minor sheet metal repair to the seat bucket assembly is authorized. Repair shall not be attempted on the other seat structure.

(3) Inspect seat structure for damage. Coverage will include cracks, loose or missing rivets, buckling and corrosion.

z. Installation of Drogue Parachute Hardshell Container.

WARNING

Failure to remove webbing carrying handle will result in improper drogue parachute operation.

(1) Remove webbing carrying handle from hard shell container. Verify that next scheduled repack date is due concurrently with or after next scheduled ejection seat inspection. Ensure service life remaining on the drogue parachute withdrawl line is at least equal to the number of days remaining until next scheduled ejection seat inspection (Refer to TM 10-1670-250-20).

WARNING

Drogue connector line must be located in the left-hand rear corner (drogue gun side) of the container. Return to parachute pack facility if not properly located.

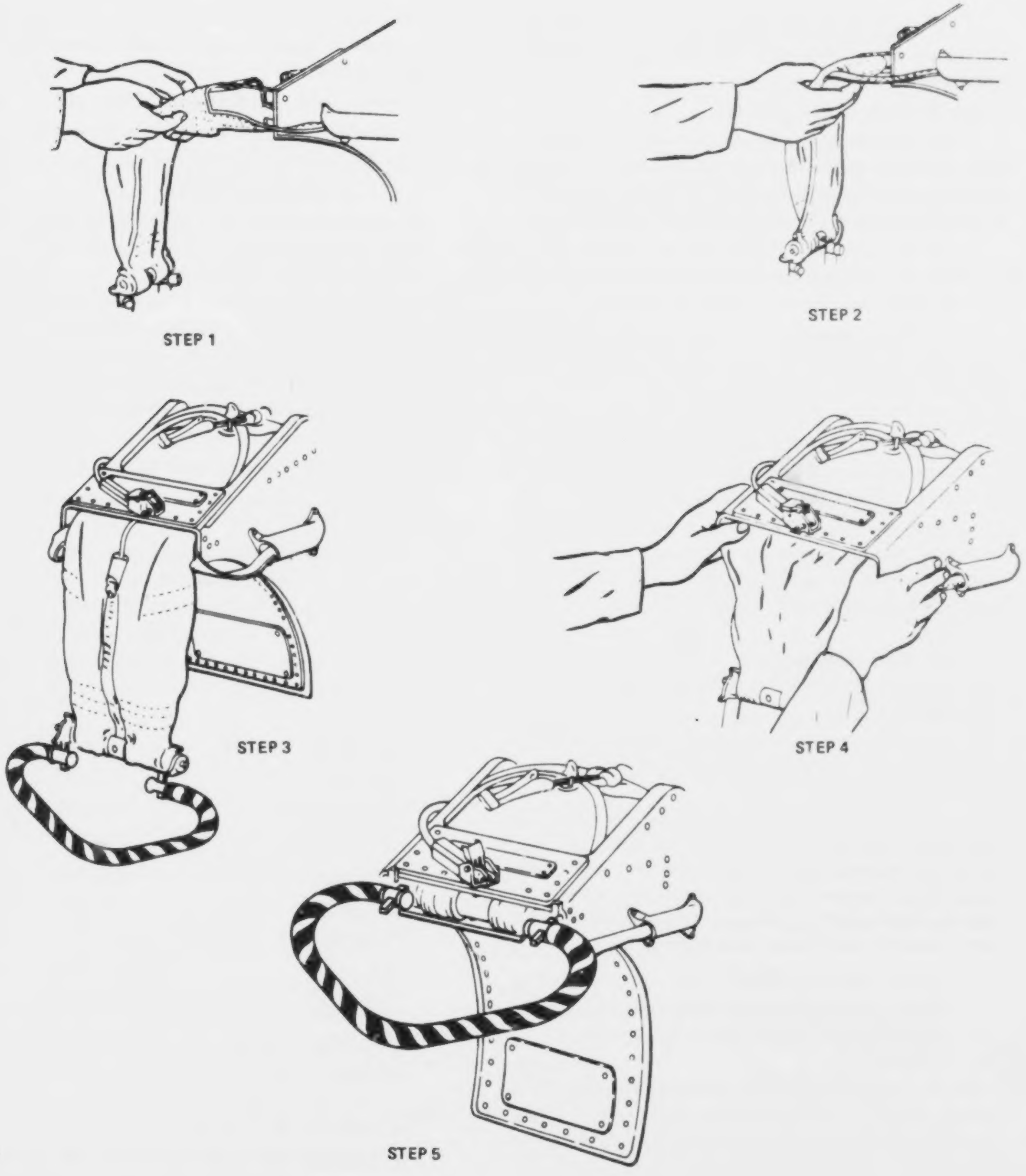
(2) Install hardshell container on ejection seat utilizing prior removed hardware. The large flat washer is placed between the drogue container and the ejection seat, and the solid washer is placed against the ejection seat with the lock washer and nut last.

NOTE

The head of the screw should be inside with nut outboard.

(3) Scissor should remain vertical on top of drogue container until personnel parachute pack is installed on seat.

(4) Insert upper firing cable through pocket on forward sunlight cover flap of hardshell container.



40VJ5M-30

Figure 4-34. Face blind installation

(5) Position upper firing cable off to side of container for subsequent installation of drogue hardshell container.

aa. Repack of Face Blind.

(1) Push face blind restraint strap connector links through guide tubes on each side of drogue parachute container and secure in fitting (attached to container) with link line quick-release pins.

NOTE

The face blind must be repacked after installing the drogue parachute system.

(2) Push upper firing (thick) cable through rear of face blind container until end ring contacts back of container.

NOTE

Ensure that straps are not twisted and that face blind is installed with rubber stops on handle pointing down.

(3) Fold under sides of face blind curtain to width of drogue parachute container mouth. Fold under stitched aft end of face blind curtain and insert in drogue parachute container mouth. (See figure 4-34.)

(4) Stow excess upper firing cable (loop to left) between first and second folds of the face blind. (See figure 4-34.)

(5) Pack face blind curtain (accordian fold) into container, using thumbs to press it back and down into container.

(6) Place face blind handle body in mouth of container, placing the palm of one hand against body, and push inward. With the other hand, grasp face blind handle and pull outward to retract spring-loaded locking plungers while pushing body into mouth of container. (See figure 4-34.)

NOTE

Check that plungers are fully engaged in their receptacle when face blind handle is released.

(7) Raise face blind locking mechanism bellcrank to lock face blind handle in place, and insert face blind safety pin through locking mechanism.

NOTE

Face blind locking mechanism should lock without binding.

ab. Drogue Gun Installation. Install drogue gun on ejection seat, in the unloaded but cocked condition, as follows:

NOTE

Verify drogue gun is not overage (refer to para 4-8).

WARNING

Do not attempt to arm the drogue gun until ejection seat is installed in the aircraft.

(1) Ensure engagement of locking plunger by hitting drogue gun body with palm of hand.

(2) Install drogue gun on main beam mounting studs (6, figure 4-3) and secure with nuts and washers (7). Tighten nuts to torque specified in table 4-1.

(3) Check trip rod for binding and corrosion.

(4) Install bungee (16) on drogue gun/TCR cable trip rod (11).

Table 4-1. Nut Torque Values for UNF and UNC Bolts

Bolt Size	Torque Value (Inch-Pounds)
6 UNC	10-12
8 UNC	14-18
10 UNF	36-45
1/4 inch	77-96
5/16 inch	145-180
3/8 inch	290-360
7/16 inch	420-520
1/2 inch	620-770
9/16 inch	920-1,150
5/8 inch	1,250-1,560
3/4 inch	2,525-3,125
7/8 inch	3,680-4,600
1 inch	5,200-6,500

(5) Connect TCR dispenser cable (15) to lower end of drogue gun/TCR cable trip rod (11) with flathead pin, cotter pin (12).

MAPS

TRANSPOSED TO

END OF VOLUME

(b) Insert sear fully into its hole in time release mechanism.

NOTE

Due to a double detent in the sear receptacle, a slight tap may be necessary to seat the sear.

(c) Place cocking tool, Part No. MBEU/6945, on top of time release mechanism with hand lever forward. (See A, figure 4-35.)

(d) Insert small pin at end of chain on cocking tool into vertical hole in scissor release plunger housing. Insertion of this pin will prevent plunger from releasing restraining scissor movable arm.

(e) Insert pin on end of cocking tool cable in hole in lower end of mechanism rack plunger (outboard plunger with short stroke).

(f) Cock rack plunger by pushing cocking tool handle down until plunger retracts into body of time release mechanism as far as it will go (B, figure 4-35).

(g) Slowly release cocking tool handle. After a short return motion, rack plunger should lock in retracted position.

NOTE

The escapement mechanism operation will be audible during the rack plunger cocking.

(h) Remove cocking tool pin from rack plunger.

(i) Insert cocking tool pin at end of cable into hole in harness release plunger (inboard plunger with the long stroke (C, figure 4-35)).

CAUTION

When cocking time release harness release plunger with trip rod indicator is installed, care should be exercised to prevent damage to the trip rod indicator.

(j) Cock harness release plunger by pushing handle of cocking lever down as far as it will go. Plunger must be retracted as far as it will go into mechanism. At same time, the small pin which was inserted at top of scissor release plunger housing will be expelled (D, figure 4-35).

(k) Slowly release cocking tool handle. After a short return motion, release plunger should lock in the cocked position. The time release mechanism is now cocked.

(l) Remove cocking tool from time release mechanism.

(m) Connect trip rod bungee.

ae. Inspection of Oxygen System.

(1) Inspect oxygen hose for cracks and deterioration.

(2) Inspect oxygen hose fittings for serviceability.

(3) Inspect oxygen quick-disconnect bridle and lanyard for fraying, loose stitching, and for proper installation.

(4) Inspect oxygen cylinder for visible damage and corrosion.

(5) Visually check oxygen cylinder quantity indicator for proper capacity.

af. Installation of Oxygen System.

(1) Position oxygen cylinder (13, figure 1-9) on oxygen cylinder support bracket (11), routing oxygen hose (6) through bracket.

NOTE

Ensure that oxygen quantity gage faces right side of seat.

(2) Secure oxygen cylinder to seat bucket with clamp (1); then tighten adjusting nut (14), and secure oxygen hose (6) to oxygen quick-disconnect bridle and lanyard (5).

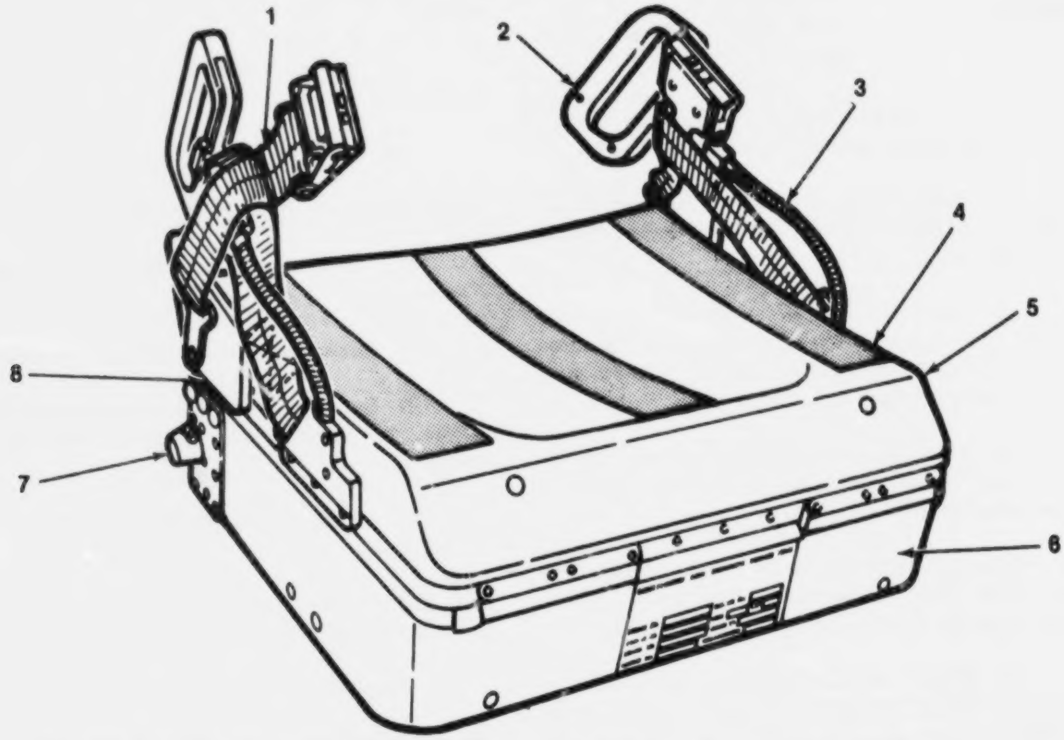
(3) Position cable link (29) on bellcrank (24) and secure with quick-release pin (25).

ag. Rigid Seat Survival Kit (RSSK).

(1) Inspect occupant's retention straps (1, figure 4-36) for fraying and loose stitching.

(2) Inspect metal and fiberglass parts of survival kit container (6) for signs of wear, fractures, and soft spots (discoloration).

(3) Inspect velcro strips (4) for proper adhesion to seat pan (5).



1. OCCUPANTS RETENTION STRAPS
2. QUICK RELEASE GRIP DEVICE
2. RELEASE CABLE
4. VELCRO STRIPS
5. SEAT PAN
6. SURVIVAL KIT CONTAINER
7. RIGID SEAT RETENTION LUG
8. LOCK

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Figure 4-36. Rigid seat survival kit (RSSK)

(4) Inspect release cable (3) for nicks, gouges, and security.

(5) Inspect dual quick-release grip device (2) for overall security.

(6) Apply approximately 15 pounds of hand pull force on quick-release grip device (2) to unlock seat pan (5) from survival kit container (6).

(7) Inspect survival kit equipment for contents and condition of each component in accordance with TM 55-1680-317-23&P.

(8) Inspect inside of RSSK for cleanliness, security of attachment fittings (1, figure 4-37) and condition of nylon lines (2).

(9) Repack survival equipment in accordance with TM 55-1680-317-23&P and secure equipment bag (3) with straps (4, fig. 4-37).

(10) Attach seat pan (5, figure 4-36) to survival kit container (6) and engage latches to locking mechanism and press down to lock.

(11) Ensure that seat pan is securely locked to survival kit container.

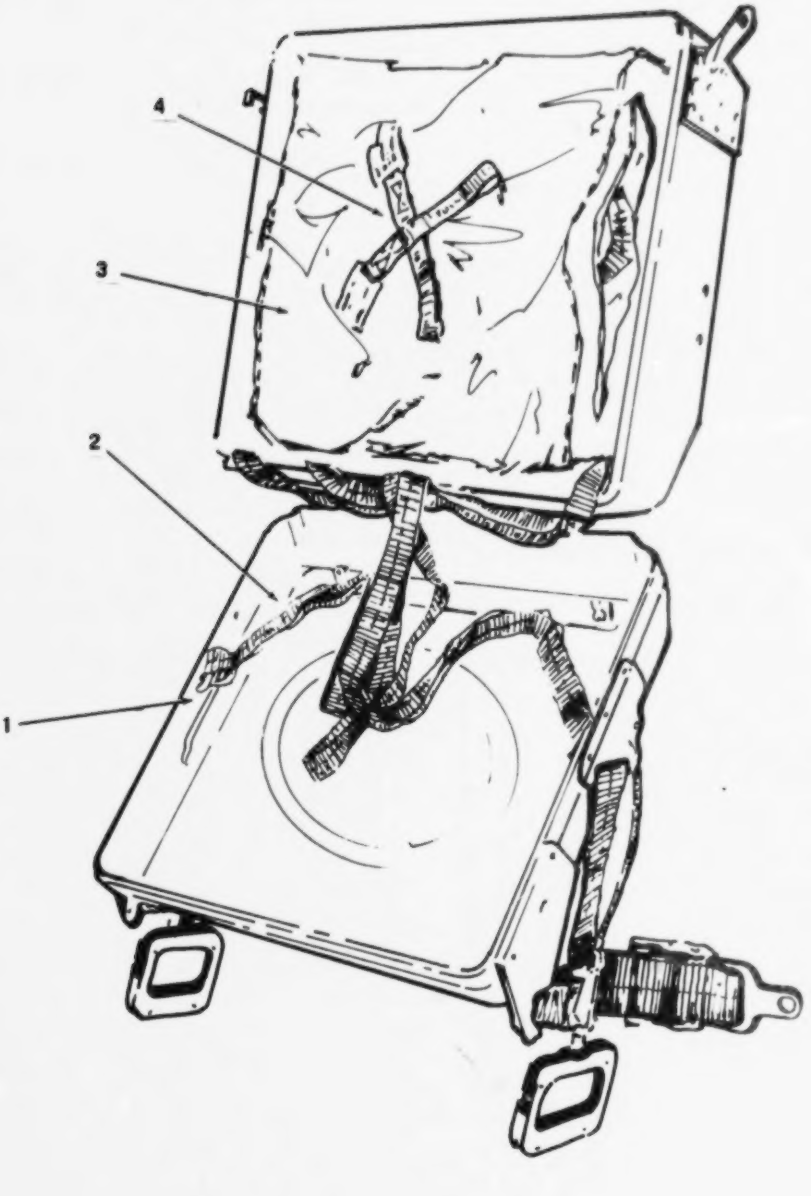
ah. Installation of RSSK.

(1) Ensure that guillotine initiator is disarmed.

(2) Position manual override handle to up (unlocked) position.

(3) Place RSSK into ejection seat bucket. Position RSSK so that retention lugs (7, figure 4-36) fall into slots in rear of seat bucket.

(4) Firmly push aft on RSSK to engage retention lugs into slots.



1. ATTACHMENT FITTINGS
2. NYLON LINES
3. EQUIPMENT BAG
4. EQUIPMENT BAG RESTAINT STRAPS

Figure 4-37. Survival Equipment Pack

(5) Position manual override handle to down (locked) position and pull up hard on occupant retention straps (1) to ensure that RSSK has been latched to seat bucket.

(6) Install sticker strap lugs into their respective sticker clips.

ai. Inspection of Lumbar Support and Cushion.

(1) Inspect cushion for cleanliness, tears and loose stitching.

NOTE

If cleaning of cushion is to be accomplished. (Refer to paragraph 3-6c.)

(2) Inspect velcro material for adhesion to lumbar support.

(3) Inspect lumbar support for damage and security.

(4) Inspect roller and bracket for cracks and security.

NOTE

Loose stitching on cushion velcro strips and cushion edge folds may be repaired by parachute repair facilities.

(5) Install back cushion by firmly pressing against the lumbar support pad.

aj. Installation of Personnel Parachute Pack.

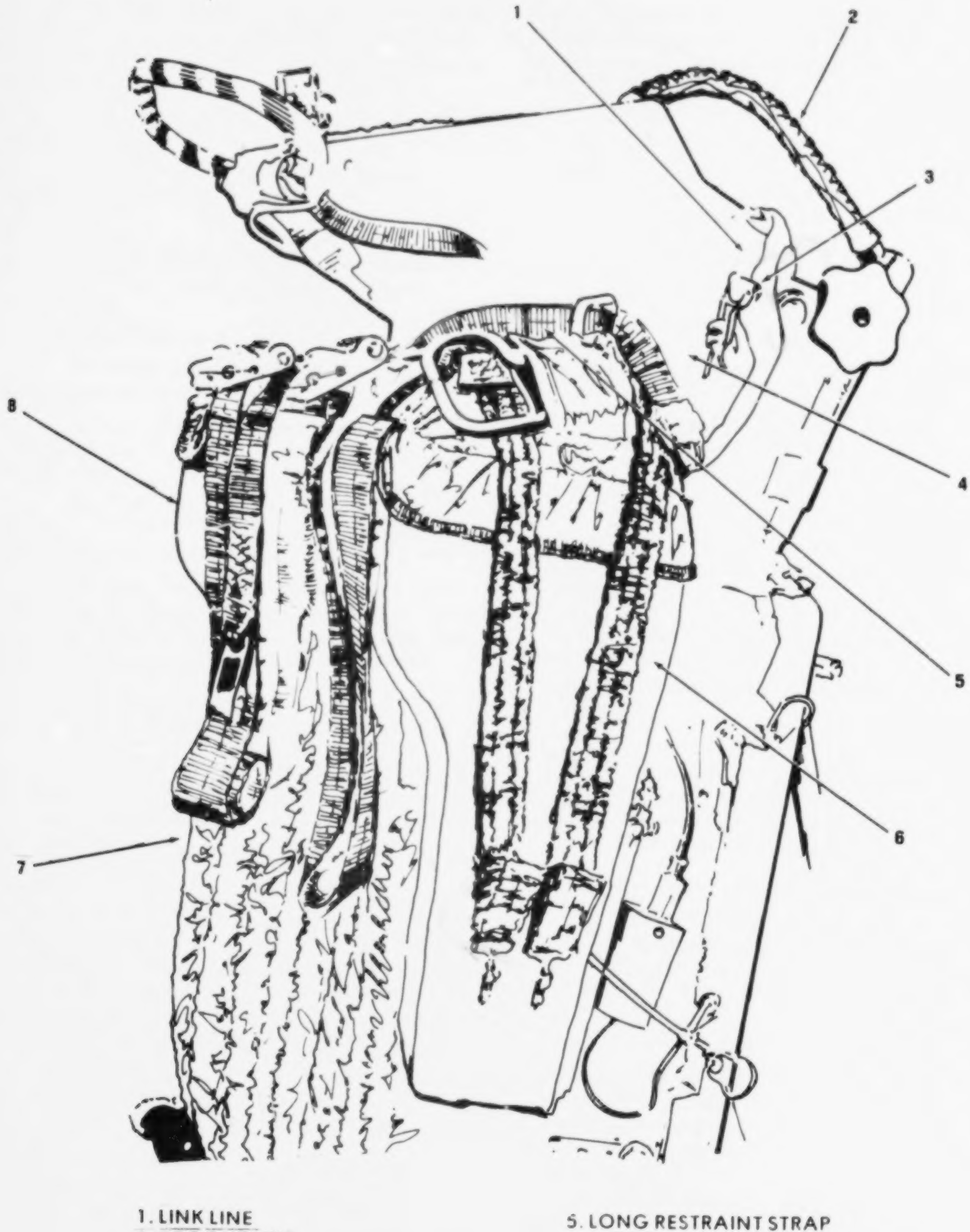
(1) *Prior to installation.*

(a) Verify that parachute has been repacked and next repack date will be in phase with ejection seat inspection. (Refer to DA form 10-42).

WARNING

Personnel parachute pack with plastic suspension line storage tray will require seat to be removed and inspected at 90-day interval.

(b) Ensure that both parachute rip cords under inspection flap are engaged with locking cones and safety-tied.



1. LINK LINE
2. DROGUE LINE
3. LINK LINE QUICK - RELEASE PIN
4. SHORT RESTRAINT STRAP
5. LONG RESTRAINT STRAP
6. PERSONNEL PARACHUTE
7. BACK PAD
8. PARACHUTE RISERS

Figure 4-38. Personnel Parachute and Restraint Strap - Location View

MAPS

TRANSPOSED TO

END OF VOLUME

(c) Check general condition of parachute container for cracks and distortion. Check riser extension for rips, tears, soil, etc. Check security of pack opening velcro bands.

(d) Ensure proper installation of ripcord handle.

(e) Ensure serviceability of roller yoke assemblies and riser release fittings.

NOTE

When deficiencies exist in any of the above items, return parachute to repack facility.

(2) ***Installation procedure.***

(a) Place personnel parachute on ejection seat central support bracket.

(b) On left side of ejection seat, place short restraint strap (4, figure 4-38) under face blind restraint strap.

(c) Pass link line quick-release pin (3) on left side of ejection seat through face blind restraint strap and short restraint strap (4) fitting.

(d) Pass the link line under the scissor mechanism and secure the face blind restraint strap and short restraint strap fittings to the seat with the link line quick-release pin on the right side of the seat.

WARNING

Special shouldered scissor shackle bolt only shall be used to secure the drogue shackle to the scissor shackle.

(e) Attach the link line white loop, along with the dorgue line green loop, onto the dorgue shackle. Install the special bolt through drogue shackle and scissor enclosing both lines between scissor and dorgue shackle with the bolt head nearest to the face blind handle.

CAUTION

The scissor shackle nut must be face up when scissor is in stowed (forward) position. Tighten nut until contact is made with the drogue shackle. Do not torque. Verify that clearance exists between the dorgue shackle and the scissor assembly, and that the shackle can be freely rotated on the scissor assembly.

(f) Install scissor shackle nut and wrench tighen, but do not torque. Verify that clearance exists between the scissor shackle jaws and drogue shackle by observing free movement of the drogue shackle jaws after the nut has been tightened.

(f.1) Position scissor mechanism down over the drogue chute container and install a safe tie nylon thread (item 11, table 1-2) between drogue shackle and drogue sunlight cover flap securing pin.

CAUTION

Assure link line is not pinched between scissor and stops.

(g) Pass nylon thread under flap securing pin and under front flap securing tie.

WARNING

The drogue scissor shackle must point slightly toward left side of seat (drogue gun side) or full forward when safety tied. If shackle faces right side of seat, the drogue parachute must be returned to the parachute pack facility for proper packing.

(h) Route the nylon thread through the drogue shackle and tie ends with a surgeon's knot and locking knot. Cut loose ends approximately one inch from knot.

NOTE

When tying knot, slack should be taken out of looped thread without pulling tight. Loose ends should be seared and welded together.

(i) Place link line behind guillotine gate located on the left side of the seat.

(j) Attach both long restraint straps (5) to personnel parachute restraint spreaders at central support bracket.

NOTE

Manual override lever must be forward (locked) and time release mechanism must be cocked before attaching loop strap to loop strap lock.

(k) Extend parachute risers and hold them straight out. Attach roller yokes so there is no twist in the parachute riser harness between the parachute roller yokes and the parachute risers.

(l) Pass loop strap down and through roller yoke (top to bottom).

(m) Attach strap lug installation tool, Part No. 105GT1043, to loop strap lug. Push loop strap into the loop strap lock. Pull vigorously to assure loop strap is locked.

NOTE

> Pull on both long restraint straps to assure the restraint straps are locked into position (verify visually).

(n) Pass long restraing strap (5, figure 4-38) through buckle of short restraint strap(4).

(o) Pass right restraint strap through buckle of short restraint strap and tighten both restraint straps.

(p) Store excess end of long restraint straps by folding under long restraint strap.

(q) Store parachute risers (8) on velcro pads on the restraint straps.

ak. Inspection and Installation of Seat Cushion and Personnel Lowering Line.

(1) Inspect cushion for cleanliness, tears and loose stitching.

NOTE

> Refer to paragraph 3-6c for cleaning procedures.

(2) Inspect velcro strips on cushion for loose stitching.

NOTE

> Loose stitching on seat cushion edge folds only and velcro strips may be repaired by parachute repair facilities.

(3) Inspect personnel lowering line for oil and liquid stains by lifting the velcro attached cover.

CAUTION

> Do not remove the lowering line from the stow loops.

(4) Inspect lowering device friction brake for obvious damage and corrosion.

(5) Inspect zipper for corrosion, damage and loose stitching.

NOTE

> Loose stitching on cover, velcro and zippers may be repaired by parachute repair facilities.

NOTE

> The personnel lowering device and line are "on-condition items". If serviceability is in doubt replace with serviceable assembly.

(6) Install seat cushion by pressing firmly against RSSK cover assembly.

(7) Install thigh cushion and lowering line by pressing against the thigh extensions on the forward edges of the seat bucket.

4.7. One Year Requirements.

Accomplish the following every twelve months:

a. Remove drogue gun piston and inspect piston and barrel for corrosion.

b. Lightly lubricate barrel and piston with lubricating oil (2, table 1-2) prior to assembly.

c. Replace O-ring and shear pin during assembly.

d. Accomplish functional test of barostat test altimeter per TM 55-1510-204-25/1. Record test date on gummed label and affix to altimeter mounting plate.

4.8 Three Year Requirements.

Accomplish the following every three years.

a. Replace time release mechanism three years after installation on the Ejection Seat. (Refer to para 4-6d).

b. Replace drogue gun three years after installation on the Ejection Seat (Refer to para 4-6e).

4-8.1 Three and One-half Year Requirements.

Accomplish the following every three and one-half years.

a. Replace the ejection gun primary cartridge (Refer to para 4-3b).

b. Replace the ejection gun auxiliary cartridge (Refer to 4-6n(7).

c. Deleted.

NOTE

> **The expiration date is defined as 3.5 years from the date of the opening of the sealed container, but under no circumstances can this date exceed the prescribed years of manufacture (shelf life).**

4-9. Four and One-half Years.

Accomplish the following every four years.

Replace guillotine cartridge (Refer to para 4-3e).

NOTE

The expiration date is defined as four (4) years from the date of opening the sealed container, but under no circumstances can this date exceed the prescribed years from the date of manufacture.

4-10. Five Year Requirements.

a. Replace the droque cartridge.

NOTE

Expiration date is defined as five (5) years from the date of opening the sealed container, under no circumstances can this date exceed the prescribed years from the date of manufacture.

4-11. Six Year Requirements.

Replace ejection seat M119 rocket motor 6 years from the date of manufacture regardless of installation (SERVICE) date.

4-12. Seven Year Requirements.

Replace parachute harness assembly providing it is seven years of age from date of installation.

4-12.1 Eleven and One-half Year Requirements.

Accomplish the following every eleven and one-half years.

a. Replace the ejection gun primary cartridge.

b. Replace the ejection gun auxiliary cartridge

NOTE

Replace cartridges ten and one-half years from date of manufacture regardless of date of installation. Refer to TM 43-0001-39 for most current manufacturing (Shelf) life limits for compliance.

4-12.2 Fourteen Year Requirements.

Accomplish the following every fourteen years.

a. Replace drogue gun cartridge.

b. Replace guillotine cartridge.

NOTE

Replace cartridges fourteen years from date of manufacture regardless of date of installation. Refer to TM 43-0001-39 for most current manufacturing (shelf) life limits for compliance.

4-12.3 Deleted.

Section III. INSTALLATION OF EJECTION SEAT

4-13. Seat Installation Procedures.

Installation of the ejection seat in the Model OV-1 (Mohawk) aircraft will require a minimum of two men. Direct Support and General Support maintenance personnel should thoroughly familiarize themselves with the installation and arming procedures outlined herein before attempting to install the ejection seat.

a. *Preinstallation Arming Procedures.* The following arming procedures apply to the ejection gun auxiliary cartridges and the guillotine cartridge.

WARNING

Use extreme caution when removing and handling guillotine cartridge as cartridge has a percussion-type primer cap. Ensure safety lock streamer assembly, Part No. 134SEME10053, safety pin is installed in guillotine sear. The auxiliary cartridges do not contain percussion-type primer caps but are filled with an explosive powder which can be accidently fired by either spark or flame.

(1) *Installation of auxiliary cartridges, Part No. MBEU/29231.*

WARNING

Do not use plastic separators (provided in the cartridge shipping container) as gas sealers. Use of plastic separators will result in ejection gun malfunction.

NOTE

Check all cartridges for expiration date. If new cartridges are to be installed, mark cartridge with expiration date and ejection seat serial number in black permanent marking ink. Enter cartridge expiration and installation dates on applicable DA Form 2408-18. Cartridges with less than 180 days service life remaining shall be replaced with a serviceable cartridge set.

(a) If auxiliary cartridge cap is installed, remove with spanner wrench, Part No. 128GT10155. (See figure 4-16.)

(b) Insert new seal in lower auxiliary cartridge chamber and insert auxiliary cartridge flat side inboard.

(c) Secure auxiliary cartridge chamber cap and tighten to a torque of 300 to 550 inch-pounds using spanner wrench, Part No. 128GT10155. (See figure 4-16.)

(d) Secure auxiliary chamber cap to lower auxiliary cartridge chamber with lockwire and lead seal lockwire (items 1 and 3, table 1-2).

(e) Repeat steps (*a*) through (c) for installation of upper auxiliary cartridge.

(2) *Installation of guillotine initiator cartridge, Part No. MBEU/16650.*

(a) To remove breech from guillotine initiator assembly, refer to paragraph 4-6*p*.

WARNING

Ensure that the firing pin does not protrude above the bottom surface of the body hole.

(b) Insert guillotine initiator cartridge into barrel of breech, being careful not to drop cartridge, and carefully screw breech into initiator body.

(c) Tighten breech on initiator assembly to a torque of 140 to 160 inch-pounds and secure to tab with lockwire and lead seal (items 1 and 3, table 1-2).

(d) Ensure the manual override handle is down and locked securely.

(e) With the safety lockpin 134SEME10053 installed in the firing pin sear, push the sear upward and install manual override handle link rod.

b. Preinstallation Inspection. Accomplish inspection of the ejection seat and ejection gun in accordance with the following instructions.

(1) Ensure that ground lock safety pins 134SEME10035 are installed in all locations except primary firing sear and drogue gun.

(2) Ensure ejection seat is mated to the proper ejection gun (by ejection seat identification number).

NOTE

Ejection seats and ejection guns may be interchanged when operational requirements dictate. However, when an interchange is required, a slipper calibration check must be performed and the ejection gun must be reidentified (stenciled) to the ejection seat (by the ejection seat identification number).

(3) Visually inspect primary firing pin sear on ejection gun for bending. Ensure that firing pin does not extend beyond body.

(4) Visually inspect ejection gun guide rails for damage.

(5) Ensure auxiliary cartridge chamber caps are properly secured with lockwire to auxiliary cartridge chamber.

(6) Visually check installation of sticker clips.

(7) Check ejection seat slippers for proper alignment.

(8) Ensure that drogue gun is cocked and firing pin does not extend beyond body.

(9) Ensure top latch mechanism is fully retracted.

(10) Ensure guillotine cutting blade is not exposed.

(11) Ensure parachute withdrawal line passes through guillotine and is secured by guillotine gate.

(12) Inspect guillotine rigid tubing for damage.

(13) Ensure small connector of TCR initiator cable conduit is lockwired to TCR cable dispenser housing and large connector is lockwired to the TCR motor initiator.

(14) Ensure that TCR dispenser cable is connected to drogue gun trip rod.

(15) Inspect parachute pack for visible damage, and security.

(16) Inspect drogue pack for visible damage and security.

(17) Verify proper installation of loop strap by vigorously tugging on strap.

(18) Inspect overall condition of seat cushion and ensure personnel lowering device is installed in thigh supports.

(19) Verify proper installation of rigid seat survival kit (RSSK) by vigorously tugging on the occupant retention assembly.

(20) Inspect leg restraint cords for cuts, fraying, and obvious damage.

(21) Inspect leg restraint brackets (on flight compartment floor) for damage and corrosion.

(22) Ensure flight compartment area is free of foreign material.

(23) Inspect lower firing cable housing for damage and routing to prevent damage during installation.

(24) Ensure guillotine breech is lockwired.

(25) Inspect TCR firing cable housing for damage and routing to prevent damage during seat installation.

(26) Ensure TCR firing cable is lockwired to M119 rocket motor initiator.

(27) Ensure TCR safety lock pin 134SEME10054 is installed.

(28) Ensure TCR nozzle is not obstructed and diaphragm is not punctured.

(29) Ensure that TCR initiator cable forms a 7 to 7.5 inch diameter loop about the TCR initiator.

(30) Ensure freedom of movement of the time release mechanism rack plunger and harness release plunger by using special tool, Part No. MBEU/6945, and pulling upward toward housing base. The rack plunger and harness release plunger should retract and return to the locked position unassisted.

CAUTION

If either or both plungers fail to extend unassisted, replace the unit.

(31) Ensure barostat assembly on time release mechanism is secured with lockwire.

(32) Ensure appropriate ejection seat records have been annotated and that aircraft log book contains proper ejection seat records.

NOTE

Ejection seat historical records are required to be included in the aircraft log book by ejection seat identification number.

c. ***Ejection Gun Installation. (See figure 4-15).*** Install ejection gun in aircraft as follows:

NOTE

The ejection gun at time of installation should have the auxiliary cartridges installed and lockwired.

(1) Install the primary firing mechanism loosely without the inner tube retainer.

(2) Position ejection gun in aircraft and attach to lower floor pivot with bolt(5) and locknut (4), and torque nut from 160 to 190 inch pounds.

(3) Attach EJECTION gun upper clamp to fitting on bulkhead with bolt (3), washer (2), and locknut (1).

NOTE

Upper clamp link fitting must be 90 degrees to sloping bulkhead of aircraft. If 90 degrees is not attained, insufficient clearance between sloping bulkhead and main beam will result.

(4) Adjust upper clamp, if necessary, to obtain proper clearance between sloping bulkhead as follows:

(a) Loosen nuts securing top attachment sleeve (2, figure 4-39) to ejection gun cylinder body.

(b) Gently tap top attachment sleeve up or down to obtain the proper clearance.

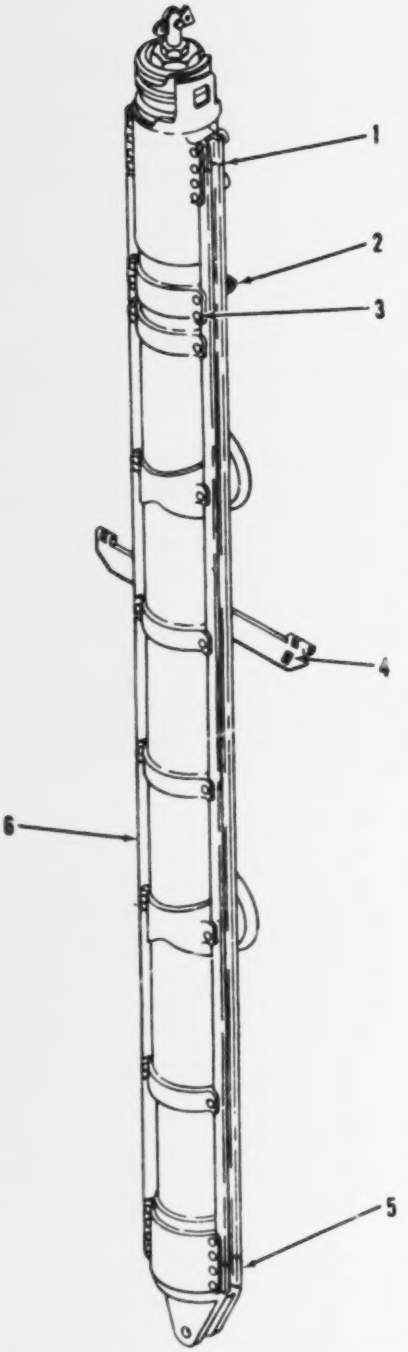
CAUTION

Failure to observe proper torque outlined in the following step will result in damage to the cylinder body of the ejection gun.

(c) Tighten attachment bolts to a torque of 25 inch-pounds.

NOTE

The transponder (APX-72) should be tested in conjunction with the 180 day seat inspection and prior to seat installation.



1. GUIDE RAIL TOP INSERT
2. TOP ATTACHMENT SLEEVE
3. BOLT, WASHER NUT
4. EJECTION GUN TRIP ROD CROSSBEAM
5. GUIDE RAIL BOTTOM INSERT
6. GUIDE RAIL

40VJ5M-59

Figure 4-39. Attachment of ejection gun top attachment sleeve

(1) Avionics repairman and ejection seat personnel will assist one another, using test set AN/APM-378, to test AN/APX-72 transponder.

(2) Connect APM-387 to aircraft according to instructions, connect pilots APX-72 connector plug to the bulkhead connector.

(3) Using the APM-378 as a monitor, depress and release actuating switch to ensure emergency signal is transmitted. (Check both seats).

d. Ejection Seat Installation. To install ejection seat in aircraft, proceed as follows:

(1) Ensure that safety pins of the ground safety lock assembly are installed in the face blind locking mechanism, drogue gun, TCR cable dispenser, manual override handle, lower firing handle, and seat bucket locking plunger.

(2) Install hoisting sling, Part No. 105GT1024-33, on ejection seat. (See figure 4-8.)

(3) Remove ejection seat from seat cradle, Part No. 105GT1040, as follows:

(a) Pull locking pin and lift ejection seat clear of seat cradle using lifting hoist.

(b) Remove transportation cradle mounting rail from ejection seat.

(4) With the ejection seat supported by a lifting hoist, check slipper alignment on main beam.

NOTE

Slipper misalignment will cause difficulty in installing ejection seat on gun guide rails.

(a) If misaligned, loosen slipper locking nut slightly and lightly tap misaligned slipper in proper direction with a soft mallet until slipper is properly aligned.

(b) Tighten all slipper locking nuts to a torque of 50 to 60 inch-pounds.

NOTE

Usually the lower slippers are misaligned. This is due to improper removal and installation techniques which can be avoided by proper use of the alignment tool.

(5) Install alignment tool, Part No. 105GT1024-59, on ejection seat in the extended position.

NOTE

Ensure quick-release pin on alignment tool is to the rear. Quick-release pin cannot be removed during ejection seat installation if it is in the forward position between the ejection seat and the ejection gun.

(6) Lift ejection seat with a suitable overhead hoist and align bottom of alignment tool with top of ejection gun.

CAUTION

Ensure that the locating slots on top of the ejection gun are in the correct (left and right) position to accept the locating pin on the top crossbeam of the ejection seat.

(7) Mate ejection seat with alignment tool and slowly lower ejection seat onto ejection gun until center set of slippers engage bottom half of alignment tool.

NOTE

If ejection seat tends to bind in track, remove ejection seat from its position and recheck slipper alignment. If ejection seat continues to lower with the same hoisting sling scale reading, the slippers are in alignment.

(8) Remove quick-release pin in alignment tool, break alignment tool, and lower ejection seat until center slippers engage the ejection gun guide rails. Remove alignment tool from top of the ejection gun.

(9) Lower ejection seat to approximately 12 inches from bottom of its travel. Connect the emergency oxygen cable link to the bellcrank by inserting the quick-release pin on right side of the seat bucket. (See figure 4-40.)

(10) Remove TCR motor initiator safety pin 134SEME10054, and guillotine seal safety pin 134SEME10053.

(11) Connect the seat height adjustment electrical lead to its plug on right side of seat bucket.

(12) Connect leg restraint cords to floor fittings by installing two quick-release pins (9, figure 1-8).

CAUTION

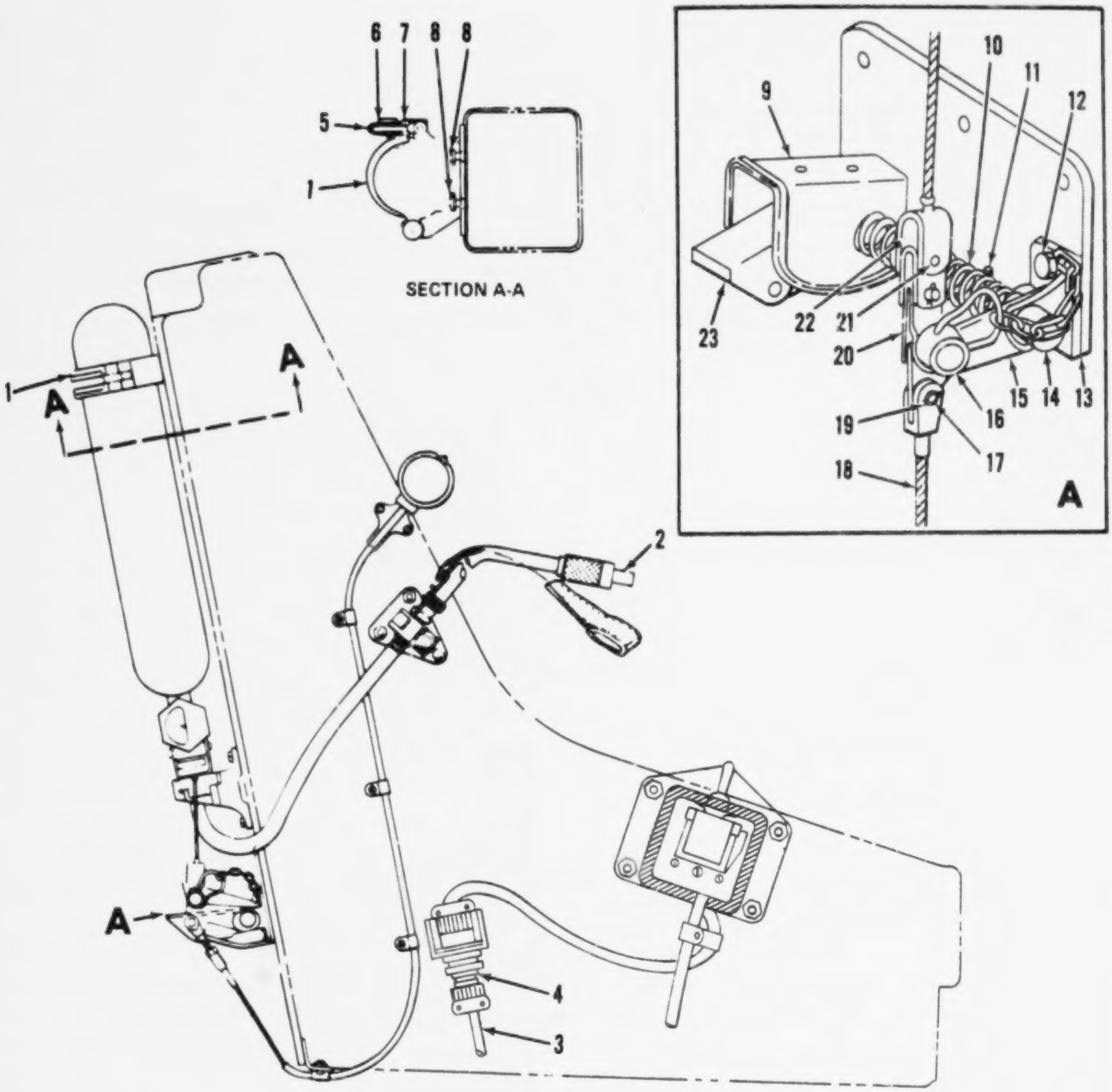
Ensure that leg restraint cords are not caught between the seat main beam assembly and cockpit floor, and they are not twisted.

(13) Lower ejection seat to bottom of its travel. Press ejection seat firmly down on ejection gun.

NOTE

As the ejection seat nears the bottom of its travel, a binding action caused by the jamming of the lower slippers on the ejection gun guide rails will commence.

(14) Remove handwheel, Part No. MBEU/26568, by turning in a counterclockwise direction. (See figure 4-6.) This action will allow the top latch plunger to extend into the ejection gun inner tube groove. (See figure 4-41.)



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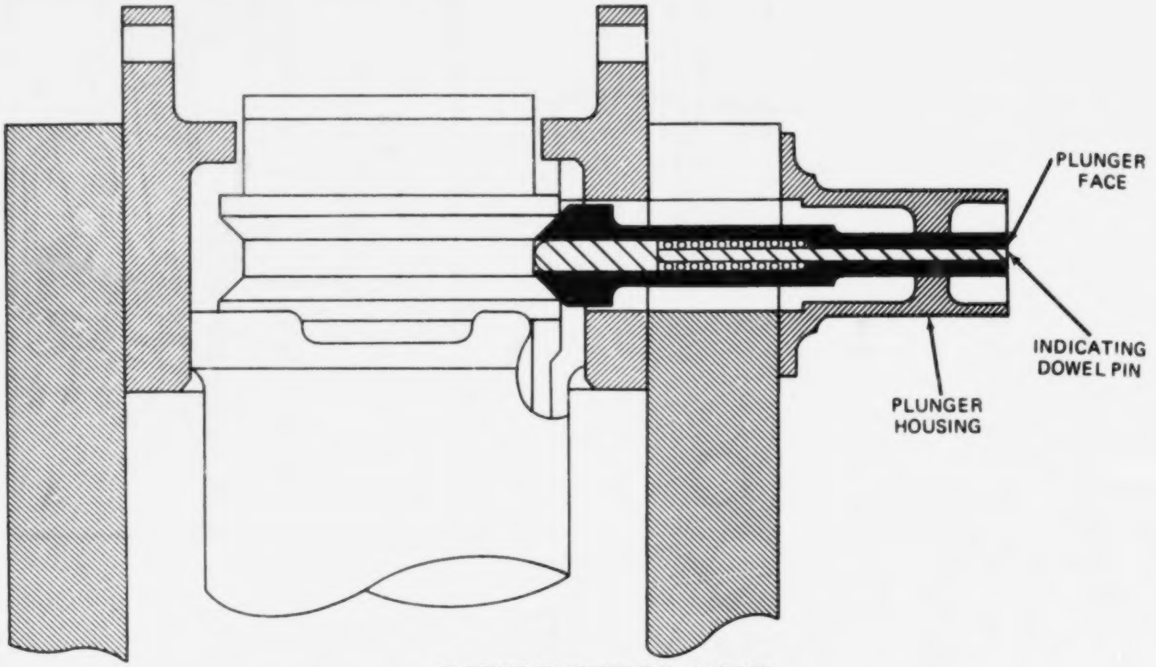
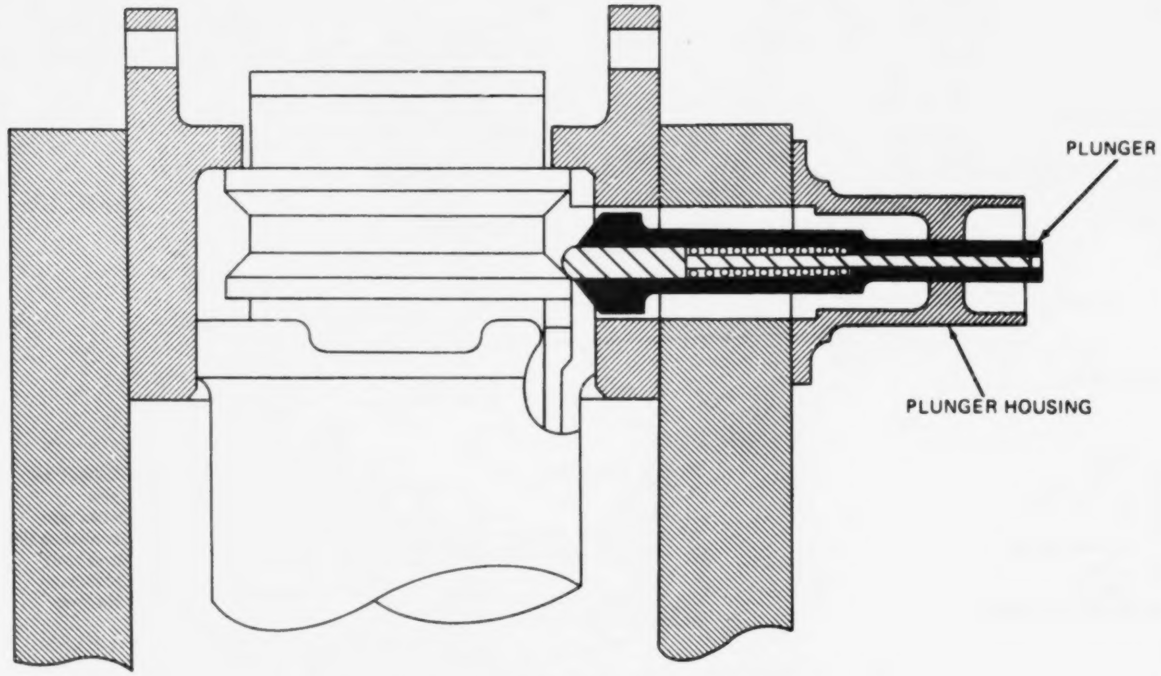
1. Clamp
2. Oxygen hose
3. Electrical lead
4. Plug
5. Adjustment nut
6. Spring
7. Eyebolt
8. Slotted nut, washer
9. Trip lever guard
10. Spring
11. Taper pin
12. Slotted nut, washer
13. Bellcrank support bracket
14. Shaft
15. Bellcrank
16. Quick-release pin
17. Flathead pin
18. Cable
19. Cotter pin
20. Connecting link
21. Shear rivet
22. Cable link
23. Trip lever

Figure 4-40. Electrical lead and emergency oxygen quick-release pins



CORRECT (PLUNGER FULLY HOME)



INCORRECT (PLUNGER NOT FULLY HOME)

40VJ5M-62

Figure 4-41. Removal of top latch plungers — correct and incorrect methods

NOTE

If the indicating dowel and top latch plunger are not flush with plunger housing, ensure ejection gun inner tube is fully down (if plunger indicates top latch mechanism is not aligned with the groove or the ejection gun, it will not fully lock), that beam locating pin is in proper alignment (pin must not bind in slot in ejection gun), and that ejection seat structure is fully down on ejection gun.

(15) Remove lifting hoist from the ejection seat.

NOTE

On aircraft equipped with the APX-72 modification, the actuating switch on the ejection gun shall be adjusted to provide 1/8-inch overtravel from the point of NO CONTACT. Overtravel is to be accomplished by adjusting the jamnuts on the switch.

(16) Connect drogue gun/TCR cable trip rod (11, figure 4-3) to ejection gun trip rod crossbeam using quick-release pin (13) stowed in drogue gun safety pin hole and insert safety pin of ground safety lock, Part No. 134SEME10035, in drogue gun safety pin hole.

NOTE

Ensure that the distance between the trip rod indicator and the outer housing of the trip rod is not more than 1/2 inch. Any more than 1/2 inch indicates that the ejection seat is not properly locked to the ejection gun.

(17) Install aircraft oxygen hose and clamp to seat bucket with screw, washer, and nut.

CAUTION

Leave sufficient slack in oxygen hose to allow seat bucket to be raised to the maximum position. Failure to comply will result in damage to the oxygen hose or connection to the aircraft.

(18) Connect time release mechanism trip rod (2, figure 4-7) to ejection gun trip rod bracket by installing quick-release pin (3) stowed in bracket.

(19) Arm the ejection gun as follows:

(a) Remove the primary firing mechanism (6, figure 4-4) that was installed loosely in the primary cartridge breech (9)

(b) Ensure that the primary cartridge breech (9) is clear to receive the primary cartridge (7).

WARNING

Primary cartridge O-ring is a special type and the correct type must be used. There is no serviceable substitute. Failure to install correct type may result in O-ring rolling over primer cap of primary cartridge, preventing firing pin from striking primer cap causing ejection gun to misfire.

(c) Install a new primary cartridge O-ring (8) on primary cartridge (7), Part No. MBEU/26434, of valid service life.

WARNING

Extreme care should be taken when handling primary cartridge as cartridge has a percussion-type primer cap.

NOTE

Handle primary cartridge in accordance with TM 9-1300-206.

(d) Using cartridge extractor tool, Part No. GR506, gently insert primary cartridge (7, figure 4-4) into primary cartridge breech (9).

(e) Ensure that primary firing mechanism (6) is cocked and firing pin does not protrude.

(f) Install primary firing mechanism (6) with inner tube retainer collar (10) into primary cartridge breech (9). Tighten primary firing mechanism to a torque of 200 to 275 inch-pounds, using spanner wrench, Part No. 128GT10155. (See figure 4-42.)

CAUTION

Open end of inner tube retainer collar must be facing aft.

(g) Install safety pin (5, figure 4-4) of the ground safety lock into firing pin sear (4).

(h) Secure primary firing mechanism with lockwire.

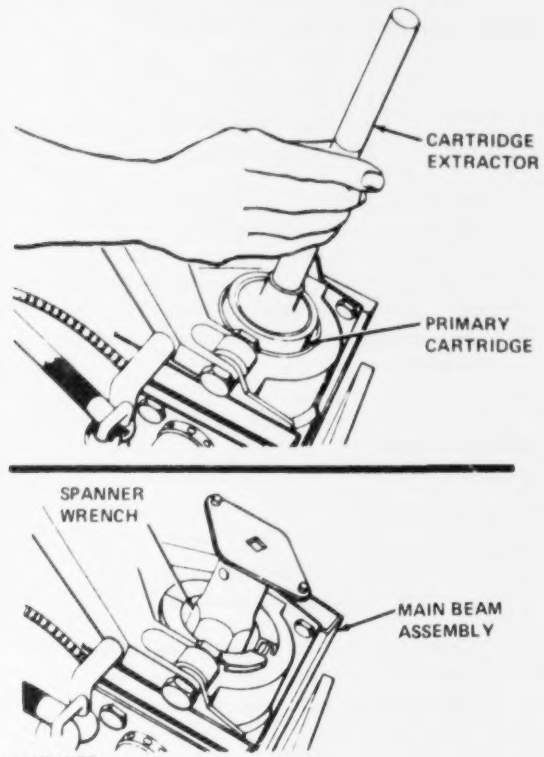


Figure 4-42. Primary cartridge location

NOTE

The lockwire is routed from the primary firing mechanism to the top of the primary cartridge breech.

WARNING

Install safety pin in primary sear before attempting to install firing cables; failure to do so can cause sear to dislodge and fire cartridge.

WARNING

Ensure upper firing cable is routed over link line segment which passes across the head box, but under the link line segment which is connected to the scissor shackle. The upper firing cable is then routed directly to the sear, ensuring the upper cable (thick) is placed over the lower (thin) firing cable.

(i) With safety pin (5, figure 4-4) installed in firing pin sear (4), push sear forward and install lower firing cable eye (thin) first and then upper firing cable eye (thick) onto hooked end of sear. (See figure 4-43.)

(20) Arm the drogue gun as follows:

WARNING

Ensure that firing pin does not protrude above bottom surface of firing body hole. A physical check is required. Drogue gun cartridge should be handled with extreme care as it has a percussion-type cap.

(a) Unscrew barrel (5, figure 4-3) from firing body (8).

(b) Ensure that sear (10) is in place, and that ground lock pin (9) is properly inserted into safety pin hole.

(c) Insert a cartridge of unexpired service life into barrel (5), being careful not to drop cartridge, and carefully screw barrel into primary firing body (8).

CAUTION

The crowfoot wrench and torque wrench must be at 90-degree angle to each other. Failure to comply will result in improper torque.

Do not exceed 160 inch-pounds torque. Excessive torque will result in damage to drogue gun cartridge and barrel.

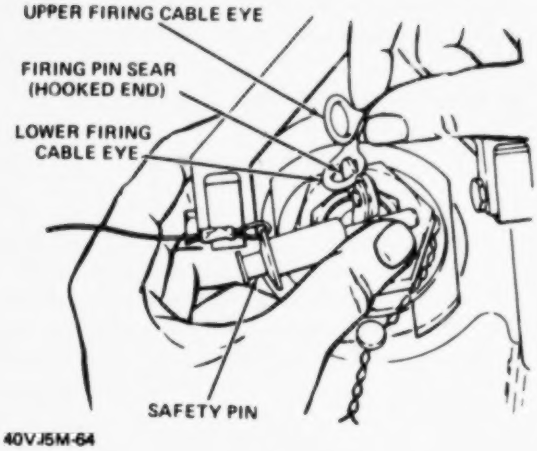


Figure 4-43. Firing cables installation

(d) Tighten barrel (5) on firing body (8) using crowfoot wrench, Part No. AN8506-11 (modified) (figure 4-44), and tighten barrel to a torque of 140 to 160 inch-pounds.

(e) Secure barrel (5, figure 4-3) to firing body (8) with lockwire.

WARNING

> It is essential for safe operation of ejection seat that drogue line (line attached to special shackle) is passed over all other lines on top of the ejection seat. The drogue line must be free to extract the drogue parachute without entanglement.

(f) Secure special shackle (1) to fork end fitting (3) on piston with bolt and nut (2), ensuring that the drogue line is passed over all other lines on top of the ejector seat and that special shackle and fork end fitting face near forward.

NOTE

> Due to manufacturing tolerance of barrel and cartridge casing, a maximum 20 degree variance to the right or left of forward is acceptable.

(21) Ensure that safety pin of ground safety lock is installed in drogue gun.

e. Inspection After Seat Installation. After the ejection seat is installed in the aircraft, perform the following inspection:

(1) Ensure proper engagement of the top latch mechanism. (See figure 4-41.)

(2) Visually inspect to ensure drogue gun and time release mechanism trip rod indicating collars are flush with or not more than 1/2-inch (maximum) away from edge of trip rod outer barrel when connected to the ejection gun crossbeam.

NOTE:

MODIFY CROW FOOT WRENCH,
PART NO. AN8506-11, TO
INCREASE OPENING FROM
1.062 IN. TO 1.105 IN.

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Figure 4-44. Crowfoot wrench part no. AN80506—11 (modified)

NOTE

> Ejection seat out of tolerance with the above inspection requirements should be considered improperly installed.

(3) Check for proper operation of the ejection seat height adjustment mechanism.

(4) Verify proper installation of the leg restraint lines to the floor brackets in flight compartment.

(5) Check for lockwire on primary firing mechanism, drogue gun, and guillotine breech.

(6) Ensure TCR motor initiator safety pin 134SEME10054 and guillotine seal safety pin 134SME10053 have been removed.

(7) Ensure emergency oxygen link pin is connected.

(8) Perform daily inspection in accordance with TM 55-1510-217-PMD.

f. Installation of Escape Hatch.

CAUTION

> Ensure right and left side cockpit entranceways are in full open position. Damage to the escape hatch can occur if cockpit entranceways are not in the full open position.

(1) Insure two spacer blocks are installed on top of fuselage at aft pivot pin covers to prevent damage to hinge cover during installation of escape hatch.

(2) Insert 3/8 inch diameter pin (4, Figure 4-2) in hole on right end of torque tube mechanism. (Note: A cut-off screwdriver with a 3 inch shank is ideal for this procedure). Do not insert pin more than 1 inch thru torque tube. This is to avoid damage to air frame structure. Rotate torque tube mechanism with pin by pushing up and aft so that outboard cams (5) are in the up position.

CAUTION

When lowering escape hatch, take care to avoid damaging the defogging disconnect seal. Also ensure the 2 moveable fairing tabs attached to the aircraft structure on the aft side of the cantilever arms (10, Figure 402) are positioned and held in the down position prior to and during lowering of the escape hatch over the cockpit.

(3) Position and lower escape hatch over cockpit. Engage aft pins in cantilever arms on escape hatch. Engage outboard cams (5) of torque tube mechanism (3) with escape hatch fittings. Align forward edge of escape hatch to insure the insertion of the five forward pins in their receptacles.

(4) Connect bungee cord to hold pneumatic actuator (6) forward, and rotate torque tube mechanism (3) with rigging pin (4) to lower outboard cams (5), slide the escape hatch forward and engage all five pins on the forward edge. Check that center bellcrank of torque tube mechanism (3) rests on roller of pneumatic actuator (6). Escape hatch should be in closed position.

(5) Remove rigging pin (4) and spacer blocks.

(6) Recharge escape hatch pneumatic actuator bottle. (Reference TM 55-1510-204-23-1 or TM 55-1510-213-23-1 as applicable.)

(7) Perform inspection after escape hatch installation (paragraph 4-13g).

(8) Install nosewheel well splash shield.

g. Inspection After Escape Hatch Installation.

(Reference TM 55-1510-204-23-1 or TM 55-1510-213-23-1 as applicable.) Proceed as follows:

(1) Inspect defogging disconnect seal for damage.

(2) Inspect that outboard cams (5) of torque tube mechanism (3) bottom of track fittings of escape hatch.

(3) Ensure that center bellcrank of torque tube mechanism (3) rests on the roller of the pneumatic actuator (6).

(4) Ensure that escape hatch is secured by all eleven pins (five on forward and two on rear and each side of escape hatch) being engaged in receptacles.

(5) Inspect escape hatch pneumatic air pressure gage (figure 4-1) for proper pressure.

Figure 4-45. — Deleted

CHAPTER V. REPAIR PROCEDURES, AND PREPARATION FOR STORAGE AND SHIPMENT

SECTION I. REPAIR PROCEDURES

5-1. General.

This section contains repair procedures for Direct Support and General Support maintenance. The instructions and procedures outlined herein will be accomplished as conditions warrant.

5-2. Telescopic Ejection Gun.

The cylinder barrel outer tube (the first of three sections) of the ejection gun is that part which is attached to the aircraft. The top is attached to the sloping bulkhead by one bolt which passes through an upper clamp, bolted to the barrel, and two links, bolted to the sloping bulkhead. The clamp may be adjusted for height by loosening four bolts, sliding fitting into proper position, then tightening bolts. The bottom is attached to the flight compartment floor by one bolt which passes through a block which swivels fore and aft to compensate for possible misalignment. The construction of this attachment point allows the ejection gun to be tipped forward for maintenance, after the upper attachment is disconnected, without removing the ejection gun from the aircraft. The upper end of the cylinder barrel has a locking window through which the top latch plunger passes. Inside the cylinder, between the intermediate tube and the cylinder barrel, there are 12 gas-filled, shock absorbing compression rings. These rings are retained by a bushing and a carrier ring. The bushing is threaded into the cylinder and locked by a special staked screw. During the ejection process, these 12 rings provide a shock absorbing stop for the intermediate tube when it reaches its full extension. The intermediate tube is open at both ends and merely provides an extension of the ejection gun stroke. The lower portion of the intermediate tube forms a piston which contains two groups of piston rings (six rings in each group), which bear on the inside of the cylinder barrel. During ejection, the intermediate tube alignment is maintained by the intermediate tube guide bushing on the top and by the piston on the bottom. The inner tube guide bushing, riveted to the inside of the top of the intermediate tube, prevents complete withdrawal of the inner tube. The two flush rivets are sheared during ejection and the inner tube guide bushing is carried away on the inner tube. The intermediate tube, having been extended to its full 39-inch stroke and then stopped by the action of the 12 shock absorbing compression rings at the top of the cylinder barrel, remains with the aircraft after ejection. The inner tube is open at the bottom and closed at the top by the primary firing mechanism and the primary cartridge. The lower end of the inner tube forms a piston, containing one group of six piston rings which bear on the inside of the intermediate tube. The inner tube carries the ejection seat from the aircraft. It bears against the upper crossmember of the ejection seat main beam assembly to transmit the thrust of the telescopic ejection gun. The alignment of the inner tube is maintained at the top by the inner tube guide bushing (riveted to the inside of the top of the intermediate tube) and at the bottom by the inner tube piston. The inner tube is held to the seat by the inner tube retaining ring. The inner tube retaining ring is located near the firing mechanism body and prevents the inner tube from falling free of the seat when the momentum of the ejection has been spent. The stroke of the inner tube is 33 inches.

a. Removal.

(1) Remove ejection seat. (Refer to paragraph 4-3.)

(2) Remove ejection gun upper clamp fitting from aircraft sloping bulkhead by removing locknut (1, figure 4-15), washer (2), and bolt (3).

(3) Remove locknut (4) and bolt (5) securing ejection gun (6) to lower pivot and remove ejection gun from aircraft.

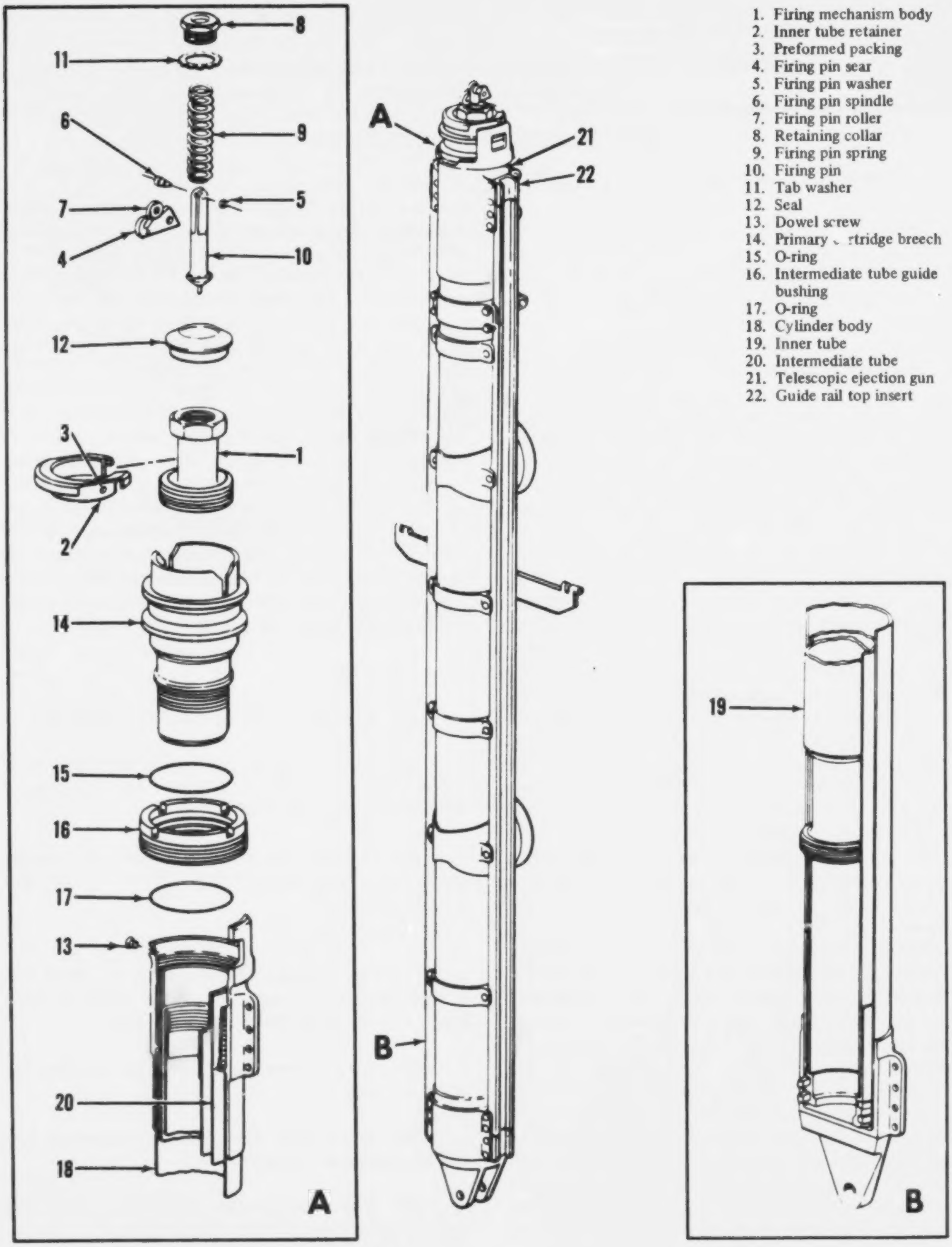
b. Disassembly.

(1) Mount telescopic ejection gun (21, figure 5-1) in a smooth jaw vise, using ejection gun clamp mounting blocks, Part No. MBEU/8463. (See figure 4-27.)

(2) Remove dowel screw (13, figure 5-1) from top of cylinder body (18).

(3) Extend inner tube (19) and intermediate tube (20) approximately 9 inches.

(4) Remove intermediate tube guide bushing (16) using spanner wrench, Part No. MBEU/5787.



1. Firing mechanism body
2. Inner tube retainer
3. Preformed packing
4. Firing pin sear
5. Firing pin washer
6. Firing pin spindle
7. Firing pin roller
8. Retaining collar
9. Firing pin spring
10. Firing pin
11. Tab washer
12. Seal
13. Dowel screw
14. Primary cartridge breech
15. O-ring
16. Intermediate tube guide bushing
17. O-ring
18. Cylinder body
19. Inner tube
20. Intermediate tube
21. Telescopic ejection gun
22. Guide rail top insert

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Figure 5-1. Telescopic ejection gun – exploded view

CAUTION

Do not attempt to separate the inner tube from the intermediate tube. They are restricted from separating by the inner tube guide bushing, which is riveted to the top of the intermediate tube. Use extreme care to prevent shearing of these rivets during servicing. If they are sheared, replace the entire ejection gun assembly.

(5) Withdraw intermediate tube guide bushing (16), inner tube (19), and intermediate tube (20) as an assembly.

c. *Cleaning.*

(1) Remove water, debris, and excess oil from bottom of ejection gun.

(2) Clean outer barrel of ejection gun with lubricating oil (item 2, table 1-2).

CAUTION

Drycleaning solvent (item 6, table 1-2) is not a suitable or authorized cleaning agent, and shall not be used.

(3) Clean ejection gun guide rails using a clean, dry cloth.

d. *Inspection.*

(1) Inspect entire telescopic ejection gun for visible damage and for corrosion.

(2) Inspect primary cartridge breech and guide bushing O-rings for damage and deterioration.

(3) Inspect breech on top of outer barrel for stripped or malformed threads.

(4) Inspect ejection gun guide rails for scoring, gouges, cracks, and cleanliness.

e. *Lubrication.*

WARNING

Excessive lubrication of the ejection gun inner and intermediate tubes can dampen the effect of the primary charge.

(1) Lubricate inner and intermediate tubes with a light coating of lubricating oil (item 2, table 1-2).

(2) Lubricate primary cartridge breech and guide bushing O-rings with grease (item 5, table 1-2).

f. *Reassembly.*

(1) Install intermediate tube (20, figure 5-1), inner tube (19), and intermediate tube guide bushing (16) in ejection gun housing as an assembly.

(2) Install intermediate tube guide bushing (16) using spanner wrench, Part No. MBEU/5787.

(3) Install dowel screw (13) in top of intermediate tube guide bushing (16). Secure screw using LOCKTIGHT (Table 1-2).

(4) Compress (retract) ejection gun inner and intermediate tubes into cylinder barrel.

g. *Installation.*

NOTE

The telescopic ejection gun, at time of installation, should have the auxiliary cartridges installed and secured with lockwire. The primary firing mechanism should be installed loosely without the inner tube retainer.

(1) Position telescopic ejection gun (6, figure 4-15) in aircraft and attach telescopic ejection gun to lower pivot with bolt (5) and locknut (4). Torque nut from 160 to 190 inch pounds.

(2) Inspect ejection gun auxiliary chamber cap to ensure it is properly lockwired to auxiliary cartridge chamber.

(3) Attach telescopic ejection gun upper clamp to fitting on bulkhead with bolt (3), washer (2), and locknut (1). Torque nut from 80 to 100 inch pounds.

NOTE

Upper clamp link fitting must be 90 degrees to sloping bulkhead of aircraft. If 90 degrees is not attained, insufficient clearance between sloping bulkhead and main beam will result.

5-3. Primary Firing Mechanism.

The telescopic ejection gun primary firing mechanism, which is threaded into the top of the inner tube, consists of a primary firing mechanism (6, figure 4-4), firing pin sear (4), firing pin (3), and a compression spring. A slot in the top of the firing pin retains the wedge-shaped sear. When the firing pin sear is pulled by the occupant pulling the face blind handle or the lower firing handle, the firing pin will strike the primary cartridge initiating the ejection process.

a. Removal.

WARNING

Never remove firing pin sear from primary firing mechanism until primary cartridge has been removed from primary cartridge breech. Any attempt to do so will cause the cartridge to be fired. Make certain that the firing pin sear is secured by the safety pin when installing or removing the firing cables. Failure to do so will result in serious injury or death to maintenance personnel.

NOTE

The following procedures are for use with the ejection seat installed in the aircraft.

(1) With safety pin installed in firing pin sear (4, figure 4-4) of telescopic ejection gun primary firing mechanism, push sear forward as far as necessary and remove upper primary firing cable (thick) (2) and lower firing cable (thin) (1) from sear.

(2) Remove lockwire securing primary firing mechanism (6) to primary cartridge breech (9).

WARNING

When removing safety pin from firing pin sear of telescopic ejection gun primary firing mechanism, ensure firing pin sear does not become dislodged. Never remove safety pin from inside the flight compartment, or while leaning over the ejection seat or the telescopic ejection gun. Removal of sear from under firing pin will cause the ejection gun to fire.

(3) Carefully remove safety pin (5) from firing pin sear (4) on telescopic ejection gun primary firing mechanism.

(4) Unscrew primary firing mechanism (6) from primary cartridge breech (9) with spanner wrench, Part No. 128GT10155. (See figure 4-5.) Remove primary firing mechanism and inner tube retainer collar (10, figure 4-4).

WARNING

Use extreme caution when removing and handling primary cartridge, as cartridge has a percussion-type primer cap.

(5) Remove primary cartridge (7), Part No. MBEU/26434, primary cartridge breech (9) using extractor, Part No. GR506. (See figure 4-5.)

b. Disassembly. Disassemble the primary firing mechanism as follows:

(1) Remove firing pin assembly by bending down tabs of tab washer (30, figure 4-26) that bears against flat surface of retaining collar (11). Unscrew retaining collar from firing mechanism body (15).

(2) Remove tab washer (30), firing pin spring (12), and firing pin (14).

c. Cleaning. Clean primary firing mechanism body (15) with dry, filtered compressed air to remove possible foreign matter.

d. Inspection.

(1) Inspect firing pin for burrs and bending.

(2) Place firing pin sear on a flat surface and check for deformation.

NOTE

Replace firing pin sear if it is bent or cracked.

(3) Inspect primary firing mechanism for malformed threads.

e. Repair or Replacement. Replacement of the ejection gun primary firing mechanism is required if the firing pin is bent or pin end is flattened.

f. Lubrication. Lubricate firing pin with a light coating of lubricating oil (item 2, table 1-2):

g. Reassembly. Assemble primary firing mechanism as follows:

(1) Install firing pin (14) and firing pin spring (12).

(2) Install new tab washer (30) by bending one tab and; placing bent tab in firing mechanism body (15) slot.

NOTE

If a new tab washer cannot be obtained, straighten and mark previously bent tabs. Select previously unbent tab for insertion in slot and bend for subsequent locking.

(3) Screw retaining collar (11) into firing mechanism body (15).

(4) Bend up tab of tab washer until it makes contact with retaining collar.

NOTE

The tab to be bent upward should be opposite tab engaged in firing mechanism body slot.

h. Test. Test primary firing mechanism in accordance with paragraph 4-6*m*.

i. Installation.

(1) Remove primary firing mechanism that was installed loosely in primary cartride breech.

(2) Ensure that primary cartridge breech (9, figure 4-4) is clear to receive primary cartridge (7).

WARNING

Primary cartridge O-ring is a special type and the correct type must be used. There is no serviceable substitute. Failure to install correct type may result in O-ring rolling over primary cap of primary cartridge and preventing firing pin from striking primer cap causing ejection gun to misfire.

NOTE

If the cartridge life has less than 90 days remaining, replace with a serviceable set.

(3) Install a new primary cartridge O-ring (8) on a primary cartridge (7) of valid service life.

WARNING

Extreme care should be taken when handling primary cartridge as cartridge has a percussion-type primer cap.

(4) Using cartridge extractor tool, Part No. GR506, gently insert primary cartridge into primary cartridge breech.

(5) Ensure primary firing mechanism (6) is cocked and firing pin does not protrude.

(6) Install primary firing mechanism (6) with inner tube retainer (10) into primary cartridge breech (9) and tighten to a torque of 200 to 275 inch-pounds using spanner wrench, Part No. 128GT10155.

NOTE

Open end of inner tube retainer must be facing aft.

(7) Install safety pin of ground safety lock into primary firing mechanism sear.

(8) Ensure that the primary firing cable is not twisted or kinked and is routed down the right side of drogue container, over the link line and under the restraining scissor.

(9) With safety pin installed in firing pin sear, push sear forward and install firing cables onto hooked end of sear. Install lower firing cable (thin) first, then install primary firing cable (thick).

(10) Secure primary firing mechanism with lockwire (item 1, table 1-2).

NOTE

The lockwire is routed from the primary firing mechanism to the top of the primary cartridge breech.

5-4. Drogue Parachute System.

The drogue parachute system consists of a 5-foot-diameter canopy, a drogue line, and a shackle. The drogue chute is packed in a hardshell container which is housed in the head box at the top of the ejection seat. The hardshell container has four flaps and secured by a flap securing pin which is a component of the drogue line.

a. Removal. Remove the drogue parachute system in accordance with paragraph 4-6*h*.

b. Inspection.

(1) Check canvas material of drogue container flaps and protective sleeve for tears, deterioration, and loose stitching. Check hardshell container for fractures.

(2) Inspect closing flap grommets to ensure they are firmly placed in the closing flaps. Inspect flap securing loop to ensure that it is not damaged.

CAUTION

Caution should be taken when transporting parachutes between maintenance activities to insure damage does not occur. Consult TM 10-1670-201-23, Chapter 4, for shipment requirements.

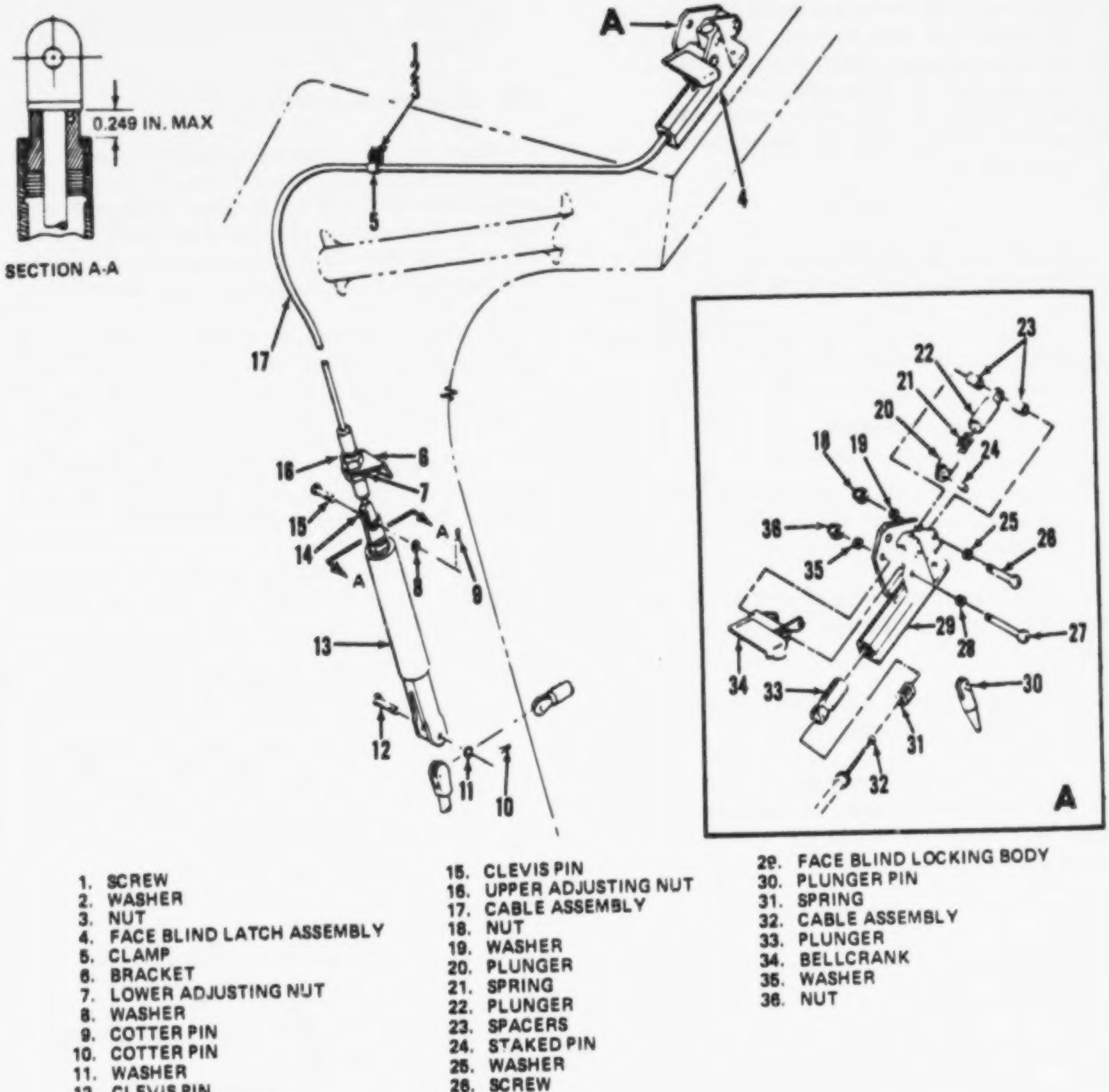
NOTE

If any doubt exists concerning the serviceability of the drogue parachute, forward to parachute maintenance for determination.

c. Installation. Install the drogue parachute system in accordance with paragraph 4-6*aa*.

5-5. Face Blind Locking Mechanism.

The face blind locking mechanism (figure 5-2) is located on the top of the ejection seat head box. The locking mechanism is locked when the bellcrank (34) is in the up position and unlocked when in the down position. The face blind locking mechanism is safetied by a plunger pin (30) of the ground safety lock when the aircraft is on the ground. The face blind locking plunger slides up and down through the face blind locking body (29) and a drilled hole in the top of the head box. The face blind locking plunger pin (30) engages in a hole in the face blind handle which



1. SCREW
2. WASHER
3. NUT
4. FACE BLIND LATCH ASSEMBLY
5. CLAMP
6. BRACKET
7. LOWER ADJUSTING NUT
8. WASHER
9. COTTER PIN
10. COTTER PIN
11. WASHER
12. CLEVIS PIN
13. PLUNGER ASSEMBLY
14. CABLE ASSEMBLY LINK END
15. CLEVIS PIN
16. UPPER ADJUSTING NUT
17. CABLE ASSEMBLY
18. NUT
19. WASHER
20. PLUNGER
21. SPRING
22. PLUNGER
23. SPACERS
24. STAKED PIN
25. WASHER
26. SCREW
27. SCREW
28. WASHER
29. FACE BLIND LOCKING BODY
30. PLUNGER PIN
31. SPRING
32. CABLE ASSEMBLY
33. PLUNGER
34. BELLCRANK
35. WASHER
36. NUT

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Figure 5-2. Face blind locking mechanism

prevents the face blind from being pulled out of its housing in the head box. A bellcrank (34), attached to the face blind locking body (29), which is riveted at the upper forward edge of the drogue container, provides the means to raise or lower the locking plunger. A plunger assembly, which acts as a spring lock, is spring-loaded and secured at one end to the face blind locking body (29), and at the other end to bellcrank (34). These units ensure locking and unlocking of the face blind handle. A second feature of the face blind locking mechanism is a plunger (33) which slides within face blind locking body (29), providing means to house a curved portion of bellcrank (34). This is accomplished when the bellcrank is depressed to the unlock position. The ball end of cable assembly (32) passes through spring (31) and is secured in a slot in plunger (33). The spring is retained by a fitting brazed to the cable assembly. The cable assembly link end (14) is secured to eyebolt of plunger assembly (13). The plunger assembly consists of a housing, an eyebolt which is inserted through an externally threaded plug, and spring, which is placed over the eyebolt and retained by nut and washer. The housing is linked to the plunger bellcrank and fork end of the manual override bellcrank. These units act as a lock override when the locking mechanism is unlocked and the manual override handle is pulled back.

a. Removal.

(1) Press bellcrank (34, figure 5-2) to down (unlocked) position.

(2) Unscrew lower and upper adjusting nuts (7 and 16) from bracket (6), mounted on head box, to relieve tension on cable assembly (17).

(3) Carefully remove nut (18), washers (19 and 25), screw (26) and spacers (23) that secure plunger (22) to face blind locking body (29). Remove spring (21) housed within plungers (20 and 22).

NOTE

Use care when removing attaching hardware. The spring (21) housed within plungers (20 and 22) will tend to pop out.

(4) Remove screw (27), washers (35 and 28), and nut (36) which act as the bellcrank (34) pivot.

(5) Carefully lift bellcrank (34) out of position. Plunger (20), which is pinned and staked to a lever on bellcrank, and plunger pin (30), which is not secured but rests in slotted lever of bellcrank, will come out with bellcrank.

NOTE

It is not necessary to separate staked pin (24) from plunger (20) and the bellcrank (34) unless signs of wear are present. Do not remove staked pin from plunger pin (30).

(6) Remove cotter pin (9), washer (8), and clevis pin (15) that secure cable assembly link end (14) of cable assembly to eyebolt of plunger assembly (13).

(7) Remove lower adjusting nut (7) and pull cable assembly (17) through bracket (6) riveted to head box.

(8). Remove upper adjusting nut (16) and nut (3), washers (2), screw (1), and clamp (5) that secure cable assembly (17) to head box.

(9) Carefully unscrew and remove cable assembly (32) from face blind locking body (29). Pull out and separate plunger (33) and spring (31) from cable.

(10) Remove cotter pin (10), washer (11), and clevis pin (12) that secure plunger assembly (13) to plunger bellcrank and fork end of inertia reel mechanism.

NOTE

Upon removal of plunger assembly (13), temporarily replace clevis pin (12) and cotter pin (10). This is to ensure that proper positioning of plunger bellcrank and fork end until the installation of the lock override plunger assembly.

b. Disassembly (Plunger Assembly).

(1) Remove lockwire that secures plug (1, figure 5-3) to housing (6). Unscrew assembled plug and pull eyebolt (2) from housing (6).

(2) Carefully remove nut (3) and washer (4). Remove spring (5) and plug (1) from shaft of eyebolt (2).

NOTE

Use care when removing attaching hardware from the eyebolt. The spring will tend to pop off the shaft of the eyebolt.

c. Cleaning.

(1) Clean all parts in drycleaning solvent (item 6, table 1-2).

(2) Dry each part carefully to remove solvent with a clean, lint-free cloth.

d. Inspection.

(1) Inspect threaded areas for crossed, stripped, or worn threads.

(2) Check that all parts are free of nicks, burrs, and corrosion.

(3) Inspect welded area of face blind locking body for cracks.

(4) Inspect brazed fittings of cable assembly for cracks.

e. Repair or Replacement. Repair of the face blind locking mechanism consists of replacing defective components.

f. Reassembly (Plunger Assembly).

(1) Install plug (1, figure 5-3) and spring (5) on eyebolt (2) and place eyebolt into housing (6).

(2) Secure plug (1) to housing (6) and install washer (4) and nut (3) on eyebolt (2). Lockwire plug (1) to housing (6).

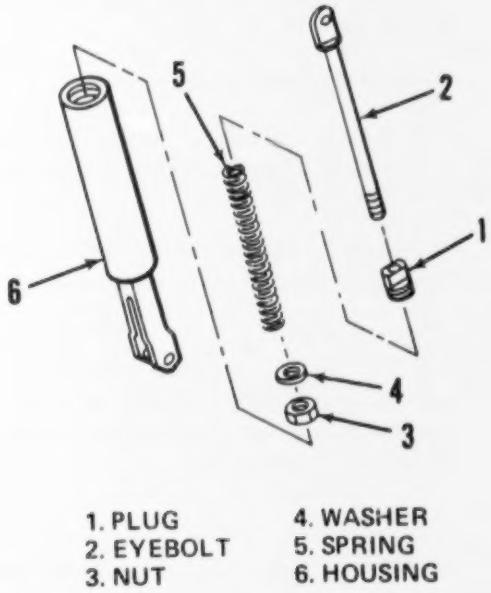

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Figure 5-3. Face blind locking mechanism plunger assembly – exploded view

g. Installation.

(1) Slip spring (31, figure 5-2) over cable assembly (32) and insert ball end of cable in slot of plunger (33).

(2) Properly position plunger (33) in face blind locking body (29). Secure by screwing fitting (brazed to cable conduit) to face blind locking body.

(3) Slide upper adjusting nut (16) on cable assembly and pass end of cable through bracket (6) mounted on side of head box.

(4) Position clamp (5) on cable assembly (17) and secure loosely to head box with screw (1), washers (2), and nut (3).

(5) Position plunger pin (30) in slotted lever of bellcrank (34). Place bellcrank, plunger (20), and safety pin on face blind locking body (29). Secure bellcrank to face blind locking body with screw (27), washers (28 and 35), and nut (36).

(6) Insert spring (21) in plunger (20) and slide plunger (22) over spring and plunger. Secure plunger (22) to face blind locking body (29) with screw (26), spacers (23), washers (25 and 19), and nut (18).

NOTE

Use care when sliding plunger (22) over spring (21) and plunger (20). The spring will have a slight tendency to resist compression.

(7) Remove clevis pin (12) and cotter pin (10) that were used to temporarily secure inertia reel plunger bellcrank and fork end.

(8) Position plunger bellcrank (4, figure 5-11) in fork end (42) and place fork end of plunger assembly (13, figure 5-2) over fork end of inertia reel mechanism. Insert clevis pin (12) (head of clevis pin aft) and secure with washers (11) and new cotter pin (10).

(9) Slide lower adjusting nut (7) over cable and secure cable assembly link end (14) to eyebolt (2, figure 5-3) of plunger assembly (13, figure 5-2) using clevis pin (15) (head of pin aft) and secure with washer (8) and cotter pin (9).

h. Adjustment. Adjust the face blind mechanism as follows:

WARNING

Ensure guillotine initiator has been disarmed. Refer to paragraph 4-3*e*.

(1) Press down on bellcrank (34, figure 5-2) to unlock face blind. The time release mechanism must be in the cocked position and manual override handle must be in forward (locked) position. Bring upper adjusting nut (16) down and tighten until slack in cable is removed.

(2) With bellcrank (34) still in the unlocked position, bring lower adjusting nut (7) up and tighten against bracket (6). Tighten clamp (5) securely to head box.

NOTE

After adjustment, ensure bellcrank (34) flap bottoms on face blind locking body (29) when in the unlock position. Failure to accomplish may cause interference with adjustment of the loop strap lug release plunger.

(3) Functionally check manual override system to ensure related linkage has not been affected by the face blind locking adjustment.

i. Maintenance Operational Check. Perform a maintenance operation check on the face blind locking mechanism in accordance with paragraph 4-6*j*.

5-6. Face Blind Assembly.

The face blind is one method by which the occupant of the ejection seat initiates the ejection sequence. The face blind consists of a face blind handle (figure 5-4) containing two spring-loaded plungers and a fabric face curtain to which the upper firing cable (thick) and two restraint strap connecting links are attached. The face blind is located in the forward compartment of the head box and retained by the spring-loaded plungers of the face blind handle. The two restraint strap connecting links, attached to the face curtain, are secured to the head box by the link line quick-release pins. A locking mechanism, located on the head box, prevents accidental extraction of the face blind by locking the face blind handle in place.

a. Removal.

(1) With ejection seat removed from aircraft and face blind locking mechanism in down position, pull face blind handle.

NOTE

Ensure face blind handle pulls freely from its position in the head box.

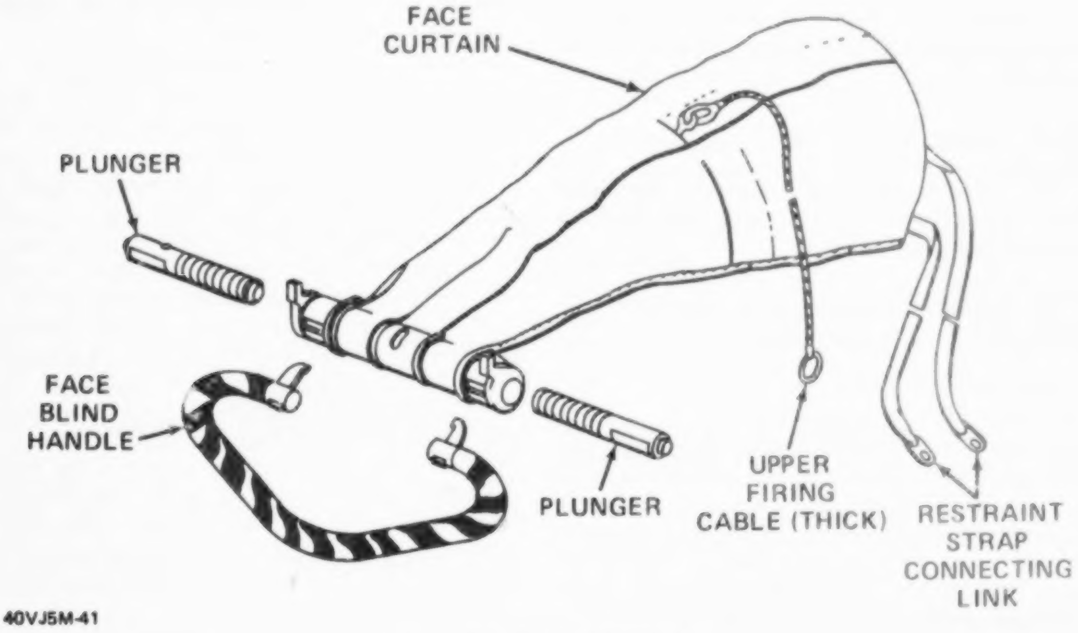

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Figure 5-4. Face blind assembly

(2) Remove link line quick-release pins (3, figure 4-38) on each side of head box and remove restraint strap connecting link. (See figure 5-4.)

b. Cleaning.

(1) Clean all metallic parts of the face blind assembly with drycleaning solvent (item 6, table 1-2).

(2) Dry each part carefully with a clean, dry, lint-free cloth.

c. Inspection.

(1) Inspect face curtain for fraying, loose stitching, and deterioration.

(2) Inspect sear roller and roller pins for elongated holes and distortion.

d. Repair or Replacement.

(1) Replace all parts of the face blind assembly that do not meet inspection requirements.

(2) Replace sear rollers and roller pins during reassembly.

e. Lubrication. Lubricate components of the body (figure 5-4) prior to reassembly with a light coat of grease (item 5, table 1-2).

f. Installation.

(1) Install restraint strap connecting link (figure 5-4) on side of head box and secure with link line quick-release pins (3, figure 4-38).

(2) Repack the face blind in accordance with paragraph 4-6z(1).

5-7. Top Latch Mechanism.

The top latch mechanism locks the ejection seat structure to the ejection gun so that the ejection seat is held firmly in the aircraft until ejection occurs. The top latch mechanism is installed in the top of the left side of main beam and consists of a spring-loaded, wedge-shaped plunger. When locked, this plunger is forced into a wedge-shaped groove in the ejection gun inner tube by spring tension. The latch plunger passes through a rectangular shaped hole in the top lip of the cylinder barrel with ample clearance to prevent binding. During ejection, the action of the ejection gun thrusts the plunger out of the wedge-shaped groove and allows the inner and intermediate tubes to be driven upward to eject the ejection seat. The top latch requires a handwheel, Part No. MBEU/26568, for installation and removal. The top latch provides a continuous visual indication that the ejection seat is locked to the ejection gun after it is installed. This is accomplished by an indicator plunger. When the latch plunger is seated against the inner tube locking V-groove, the other end of the locking plunger will be flush with the top latch housing. (See figury 3-2.) Also, the indicating plunger will be flush with the locking plunger. As a cross-check for the top latch, two trip rod indicators are installed on the ejection seat.

CAUTION

Do not remove handwheel, Part No. MBEU/26568 (figure 5-5), unless ejection gun or plunger retaining tool is placed in position. The top latch plunger is held in the plunger housing by the holding action of the handwheel and ejection gun primary cartridge breech or plunger retaining tool.

a. Removal.

(1) Install handwheel, Part No. MBEU/26568. (See figure 5-5.)

(2) Remove four bolts, four washers, and four nuts securing top latch mechanism to left vertical side beam and remove mechanism and spring.

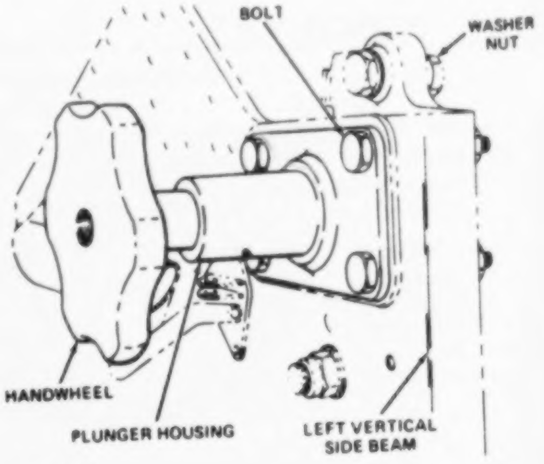

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Figure 5-5. Top latch mechanism installation

b. Cleaning.

(1) Clean top latch mechanism with drycleaning solvent (item 6, table 1-2).

(2) Wipe each part dry with a clean, dry, lint-free cloth.

c. Inspection.

(1) Inspect plunger for malformed threads.

(2) Inspect top latch mechanism body for cracks and burrs.

d. Repair or Replacement. Repair is limited to the replacement of the top latch mechanism.

e. Installation.

(1) Apply a light coating of grease (item 8, table 1-2) on plunger, spring, and in the cavity of the top latch mechanism housing.

(2) Position spring on flange end of top latch mechanism.

(3) Position latch mechanism on left side of main beam and secure with four bolts, four washers, and four nuts. (See figure 5-5.)

5-8. Drogue Gun.

The cartridge operated drogue gun (figure 4-3) extracts the drogue parachute from its container during the ejection process. The drogue gun is mounted on the left vertical side beam by two studs. The cartridge is contained in the base of the drogue gun barrel (5), which is threaded into the firing body (8). The barrel contains a piston (3) which is attached to the drogue line by means of a bolt and nut (2) and a special shackle (1). The piston is held in the barrel by means of a special shear pin (4) which is sheared when the drogue fires. The drogue gun sear (10) is attached to a drogue gun/TCR cable trip rod (11). The other end of the trip rod is attached to the ejection gun crossbeam (14) by means of a trip rod quick-release pin. As the ejection seat moves upward on ejection, the trip rod pulls the sear from the drogue gun and, after approximately a 1/2-second time delay, the firing pin strikes the cartridge, firing the drogue gun. The drogue gun contains an escapement which provides a 0.40 to 0.60 second time delay from the time that the sear is pulled until thy firing pin strikes the cartridge, firing the drogue gun. The trip rod sear (10) fits into a slot in the locking plunger assembly. This locking plunger assembly retains the firing pin in the cocked position. Pulling the sear (10) releases the locking plunger assembly. This locking plunger assembly must be pushed in manually when cocking the drogue gun. A bungee (16), connected at one end to the backrest plate and attached at the other end to the drogue gun/TCR cable trip rod (11), pulls the trip rod out of the way when the ejection seat is removed from the flight compartment for servicing. On ejection, since the drogue gun/TCR cable trip rod (11) remains with the aircraft, the bungee (16) will break by the action of the ejection seat moving upward. The ground lock pin (9) must always be installed in drogue gun safety pin hole when the aircraft is on the ground. The drogue gun trip rod quick-release pin, which normally holds the drogue gun/TCR cable trip rod (11) to the crossbeam member, is removed from the crossbeam member and used as the safety in the safety pin hole when the drogue gun is to be removed for servicing. Either pin prevents the sear (10) from being pulled.

a. Removal. Remove drogue gun in accordance with paragraph 4-6*e*.

b. Cleaning.

(1) Clean the drogue gun with a clean cloth slightly moistened in drycleaning solvent (item 6, table 1-2).

(2) Remove all traces of solvent with a clean, dry, lint-free cloth.

c. Inspection.

(1) Inspect threaded area of barrel and firing body for crossed or malformed threads.

(2) Inspect firing body mounting holes for burrs and cracks.

(3) Ensure quick-release pin slides in and out of hole in firing body easily and is not bent or malformed.

(4) Inspect bungee for fraying, cuts, and deterioration.

d. Repair or Replacement. No repair is authorized for the drogue gun. Replacement is required if drogue gun fails to pass any test outlined in paragraph 4-6*k*.

e. Testing. Test drogue gun in accordance with paragraph 4-6*k*(6).

f. Installation. Install drogue gun in accordance with paragraph 4-6*ab*.

5-9. Personnel Parachute Pack.

a. Removal. Remove personnel parachute pack in accordance with paragraph 4-6*f*.

b. Inspection. Dispatch personnel parachute assembly to parachute personnel for inspection/repack.

CAUTION

Caution should be taken when transporting parachutes between maintenance activities to insure damage does not occur. Consult TM 10-1670-201-23, Chapter 4, for shipment requirements.

c. Installation. Install personnel parachute pack in accordance with paragraph 4-6*ai*.

5-10. Rigid Seat Survival Kit (RSSK).

The RSSK container is rigid fiberglass construction which includes a retention assembly for the seat occupant. The survival kit assembly fits in the seat pan and is secured by two lower attachment lugs, which are released only when the time release mechanism or the manual override handle is actuated. An occupant retention assembly is attached to both sides of the survival container and clips to a floating lap belt which is part of the personnel harness. To gain access to an equipment bag containing the survival gear there are grip handles which, when squeezed, release a locking assembly separating the container bottom and the lid assembly. To remove the survival kit assembly from the seat bucket, release the retention lugs by moving the manual override lever to the up (unlock) position, and lift survival kit assembly from seat bucket.

a. Removal. Remove RSSK in accordance with paragraph 4-6*g*.

b. Disassembly. Squeeze grip handles releasing lock and case will separate.

c. Inspection. Inspect RSSK in accordance with paragraph 4-6*ag*.

d. Repair or Replacement. Replace the survival kit assembly if found to be defective.

e. Reassembly. Position case in place, squeeze either grip handle, lock will open. Align case and release grip handles so lock fastens case.

f. Installation. Install RSSK in accordance with paragraph 4-6*ah*.

5-11. Leg Restraint Cords and Quick-Release Garters.

The two leg restraint cords (2, figure 1-8) and the two quick-relase garters (1) are designed to pull the occupant's legs in tightly against the ejection seat thigh supports during ejection. The lower end of each leg restraint cord is attached to a separate roller bracket (11) on the flight compartment floor. Each cord is routed through a snubber unit, through a metal ring on each quick-release garter (1), and is secured in a leg restraint cord lock (5) located on the front face of the seat bucket just under the secondary firing handle (3).

a. Removal.

(1) Remove TCR motor and brackets. Refer to paragraph 4-26*a*.

(2) Remove quick-release garter from leg restraint cord.

(3) Tie a strong string to leg restraint cord (1, figure 5-6).

(4) Remove bolt (5) and nut (3) securing roller bracket (4) immediately below snubber (2) and remove roller bracket.

(5) Pull snubber finger ring (7, figure 1-8) and pull leg restraint cord form front to rear on underside of ejection seat, threading string along route of leg restraint cord.

b. Inspection. Inspect leg restraint cords and quick-release garters for fraying and cuts.

c. Installation.

(1) Remove string from old leg restraint cord (2, figure 1-8) and tie it to a serviceable leg restraint cord.

(2) Pull snubber finger ring.

(3) Pull string, threading leg restraint cord in its proper track, through leg restraint cord lock (5), from rear to front. Ensure restraint cord does not twist.

(4) Release snubber finger ring (7).

(5) Install roller bracket (4, figure 5-6) and secure with bolt (5) and nut (3).

(6) Install TCR motor and brackets. Refer to paragraph 4-25*c*.

5-12. Dual Leg Restraint Cord Lock and Snubber Unit.

The leg restraint cord locks (5, figure 1-8) secure t cord lock fittings (6) of each leg restraint cord (2) to t front face of the seat bucket, just under thy lower firing handle. Each leg restraint cord passes through a snubber unit located on the bottom of the seat bucket. The snubber units are designed to release the leg restraint cords when tl snubber finger rings (7) are pulled, thereby allowing the occupant to control the amount of slack in the leg restraint cords.

a. Removal.

(1) Remove RSSK. (Refer to paragraph 4-6*f*.)

(2) Remove screws, washers, and nuts (1, figure 5-7) securing cover plate (2) to forward portion of seat bucket (3).

(3) Remove screws, washers, and nuts securing leg restraint cord lock to seat bucket and remove lock.

b. Inspection.

(1) Inspect leg restraint cord locks for cracks around mounting holes and for corrosion.

(2) Inspect leg restraint cord lock spring for proper return of lock when snubber finger ring is released.

c. Installation.

(1) Secure leg restraint cord locks to front face of seat bucket (white lock on the left side and black lock on the right side) with screws, washers, and nuts.

(2) Secure cover plate (2, figure 5-7) to forward portion of seat bucket (3) with screws, washers, and nuts (1).

(3) Install RSSK seat pan. (Refer to paragraph 4-6*ah*.)

5-13. Leg Restraint Cord Lock Release Handle.

The leg restraint cord lock release handle (25, figure 5-8) is located on the forward left side of the seat bucket. When the handle is in the forward (locked) position, the cord lock fitting (6, figure 1-8) on the upper end of the leg restraint cord (2) may be inserted and locked in the leg restraint cord lock (5). When the handle is in the aft (unlocked) position, the upper end of the leg restraint cord is freed.

a. Removal.

(1) Remove cotter pin and flathead pin and extract clevis pin from leg restraint cord lock release handle connecting link.

(2) Remove taper pin and remove leg restraint cord lock release handle from torque tube.

b. Inspection.

(1) Inspect leg restraint cord lock release handle for corrosion and damage.

(2) Inspect for cracked or sheared flathead pin.

(3) Inspect taper pin for burrs or damaged threads.

c. Repair or Replacement. Repair of the leg restraint cord lock release handle and the related linkage is limited to the replacement of defective components.

d. Installation.

(1) Position leg restraint cord lock relase handle (25, figure 5-8) on torque tube and secure with taper pin.

(2) Secure connecting link (29) to lever link.

5-14. Lower Firing Handle and Cable Assembly.

The lower firing handle (11, figure 5-9) is located at the center of the seat bucket front panel at the top edge. The lower firing handle is connected to the ejection gun firing pin sear by lower firing cable (thin) (9) to provide an alternate means of firing the ejection gun. A safety guard is mounted on the front panel of the seat bucket. This guard, when in the up position, prevents the lower firing handle from being extracted. The guard must be in the up position at all times except during flight. Rotating the guard to the right and down will unlock the lower firing handle. A spring-loaded locking plunger housed in the front of the seat bucket, and a lever and plunger secured to a torque tube of the manual override mechanism, provide a means of locking the lower firing handle. The lower firing handle will be locked when the manual override handle is pulled up (unlocked), or dual leg restraint lock release handle is placed in the aft (unlocked) position.

a. Removal.

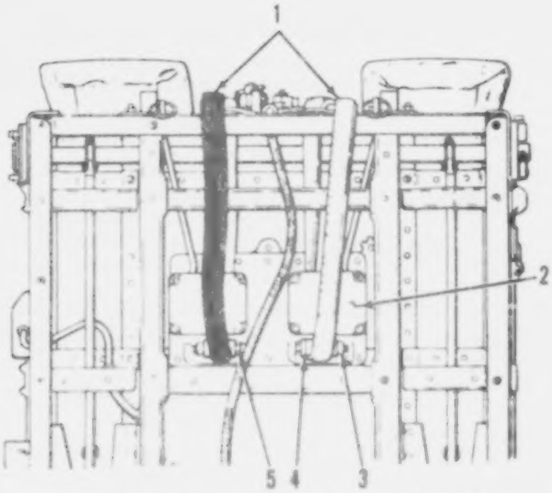
(1) Remove firing handle guard by removing nut, washer, spacer, and bolt securing plunger to attachment clamp and seat bucket; then remove nut, washers, and bolt securing firing handle guide to seat bucket.

(2) Pull lower firing handle (11 figure 5-9) out until a 2-inch length of cable is exposed.

(3) Remove special washer (12) and nut (13) which fasten firing handle to cable connector (10).

(4) Pull lower firing cable (thin) (9) and cable connector (10) from lower firing handle (11) and remove cable connector (10).

(5) Remove remaining special screw (14), washer (6), and nut (7) which secure attachment clamp (8) to seat bucket, and pull outer conduit assembly (5) and lower



1. LEG RESTRAINT CORD
2. SNUBBER
3. NUT
4. ROLLER BRACKET
5. BOLT

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Figure 5-6. Removal of roller bracket

firing cable (thin) (9) from clamp and through bottom of ejection seat.

(6) Remove special screws (1) and nuts (3) securing bracket (15) to main beam.

(7) Remove clamps (4) and guard channel from right main beam and remove outer conduit assembly (5).

b. Inspection.

(1) Inspect lower firing cable for broken wires, kinks, and corrosion.

(2) Inspect outer conduit assembly for dents, cracks, and corrosion.

(3) Inspect attachment clamps for elongated mounting holes and for cracks.

c. Repair or Replacement. Repair of the lower firing handle and cable assembly consists of replacing defective components.

d. Installation.

CAUTION

> To prevent damage to the lower firing cable, pull on cable loop on end of lower firing cable (thin), located at the top of the right main beam, to take up slack as lower firing handle is installed.

(1) ,Secure bracket (15, figure 5-9) to main beam using special screws (1) and nut (3).

(2) Position clamps (4) and guard channel on conduit and secure to right main beam.

(3) Guide outer conduit assembly (5) and lower firing cable (thin) (9) through bottom of seat bucket and position attachment clamp (8).

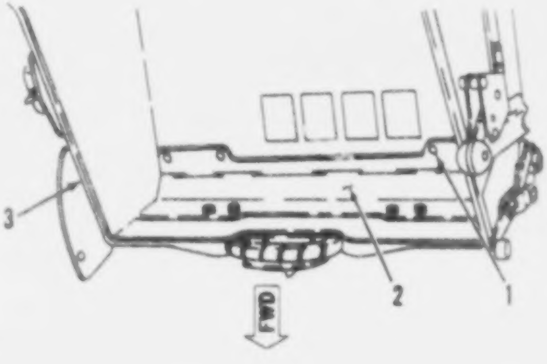
(4) Place cable connector (10) in lower firing handle (11) and secure with special washer (12) and nut (13).

(5) Install firing handle guard, securing guard to seat bucket with bolt, washers, and nut, and securing plunger to attachment clamp and seat bucket using bolt, washer, spacer, and nut.

(6) Install remaining special screw (14), washer (6), and nut (7) securing attachment clamp (8) to seat bucket.

5-15. Inertia Reel Manual Control Linkage.

The inertia reel manual control linkage (figure 5-10) releases the snubbers in the inertia reel mechanism, enabling the loop straps to extend or retract. The linkage is spring-loaded to return to the center (autolock) position from the aft (unlocked) position. The forward (locked)



1. SCREW, WASHER, NUT,
2. COVER PLATE
3. SEAT BUCKET

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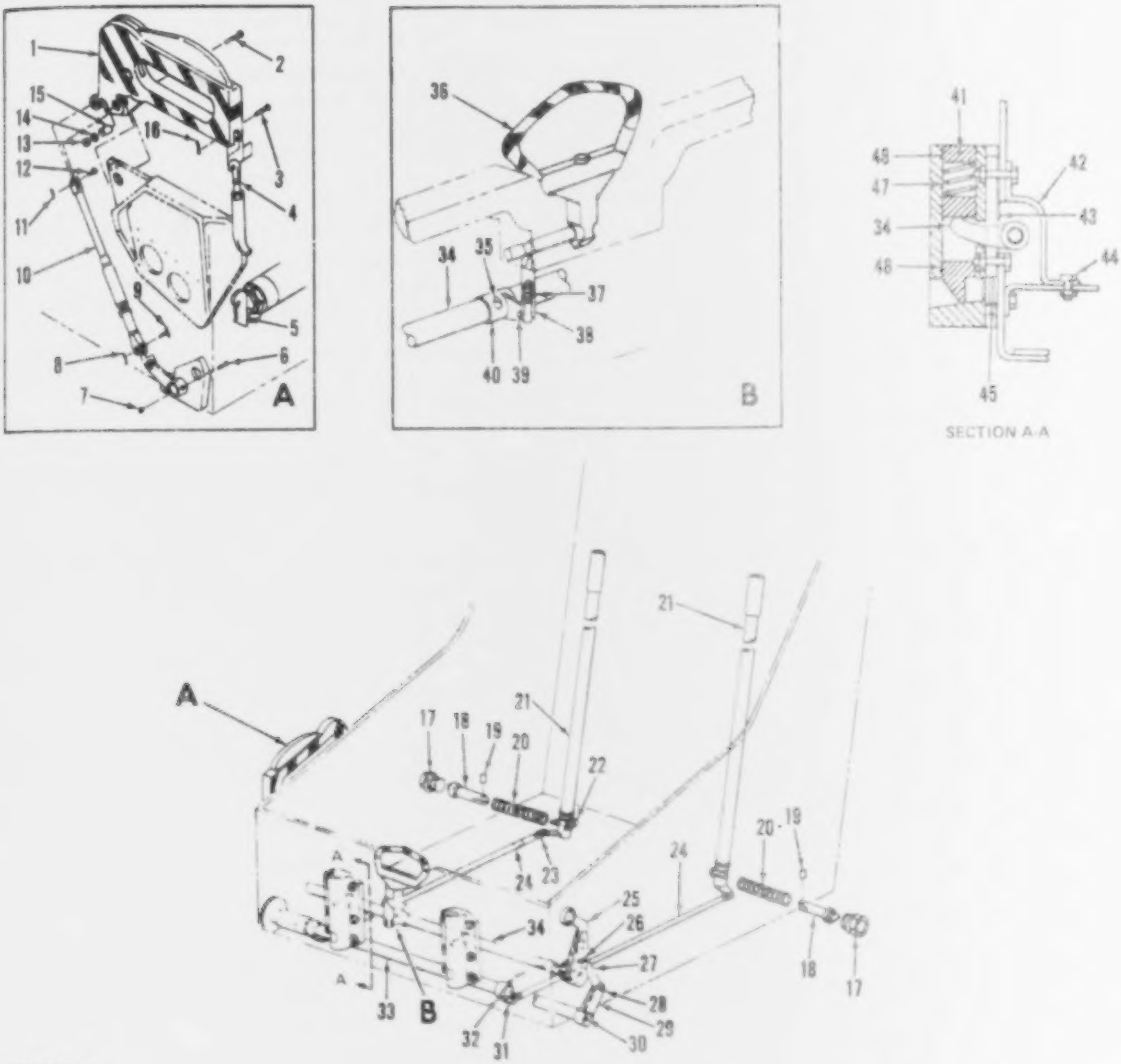
Figure 5-7. Removal of seat bucket cover plate



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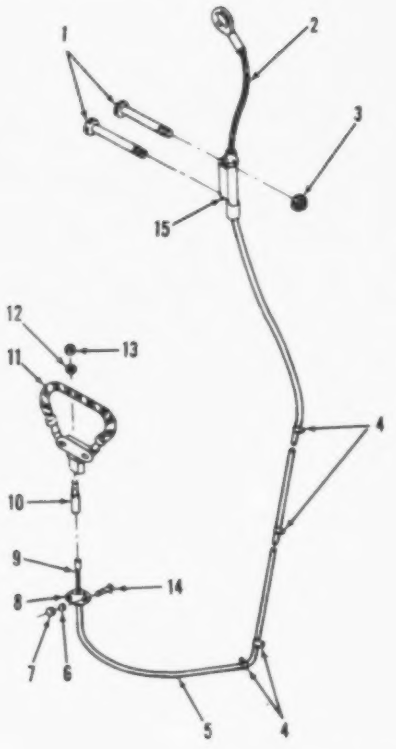
1. Manual override handle
2. Bolt
3. Flathead pin
4. Breech link
5. Guillotine initiator sear
6. Tapered threaded pin
7. Nut
8. Cotter pin
9. Flathead pin
10. Operating rod
11. Cotter pin
12. Flathead pin
13. Nut
14. Washer
15. Bushing
16. Cotter pin
17. Blanking plug
18. Plunger
19. Plunger pin
20. Plunger spring
21. Torque tube
22. Bolt, locknut
23. Locknut
24. Lower adjustment rod tube
25. Leg restrain cord lock release handle
26. Flathead pin, cotter pin
27. Lever link
28. Flathead pin, cotter pin
29. Connecting link
30. Locknut, taper pin
31. Operating lever
32. Taper pin
33. Cross tube
34. Torque tube
35. Screw,washer, nut
36. Lower firing handle
37. Locking plunger spring
38. Locking plunger
39. Flathead pin, cotter pin
40. Locking plunger lever
41. Cotter pin
42. Torque tube cover plate
43. Backup plate
44. Bolt, Nut
45. Spring
46. Locking plunger
47. Spring
48. Lock housing plug

Figure 5-8. Manual override and locking mechanism



1. SCREW
2. LOWER FIRING CABLE
3. NUT
4. CLAMP
5. OUTER CONDUIT ASSEMBLY
6. WASHER
7. NUT
8. ATTACHMENT CLAMP
9. LOWER FIRING CABLE (THIN)
10. CABLE CONNECTOR (THIN)
11. LOWER FIRING HANDLE
12. (SPECIAL) WASHER
13. NUT
14. (SPECIAL) SCREW
15. BRACKET

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Figure 5-9. Lower firing handle and cable assembly

position prevents the loop straps from extracting and allows retraction of the loop straps when the occupant leans back against the ejection seat.

a. Inspection.

(1) Inspect all hardware for security and for corrosion.

(2) Inspect inertia reel manual control handle for ease of operation.

(3) Ensure inertia reel manual control handle hits forward and aft stops when moved through its full range of travel.

b. Adjustment. If the inertia reel manual control linkage is out of adjustment (indicated by a failure of the snubbers to lock or unlock the loop straps), proceed as follows:

CAUTION

The following adjustments are compatible only with serviceable loop straps. If loop straps are frayed or distorted in cross sectional thickness, they must be replaced before linkage adjustment. After installation of new straps, afunctional check of the inertia reel mechanism should be carried out to determine if linkage adjustment is necessary. Under no circumstances should linkage adjustment be attempted with unserviceable loop straps.

(1) Ensure that inertia reel manual control handle (21, figure 5-10) bottoms out against forward and rear stops when operated through full range of movement.

(2) Place the control handle (21) in the aft unlocked position and release handle to center (autolock) position.

(3) Pull out the loop strap 18 inches and push (by hand) the snubbers (19, figure 5-11) onto the loop strap (23).

(4) With the snubbers in the locked position pull hard on the 18-inch length of the loop strap.

(5) Maintain tension on loop straps and check the rear clearance between faces of torque dogs (detail A, figure 5-10).

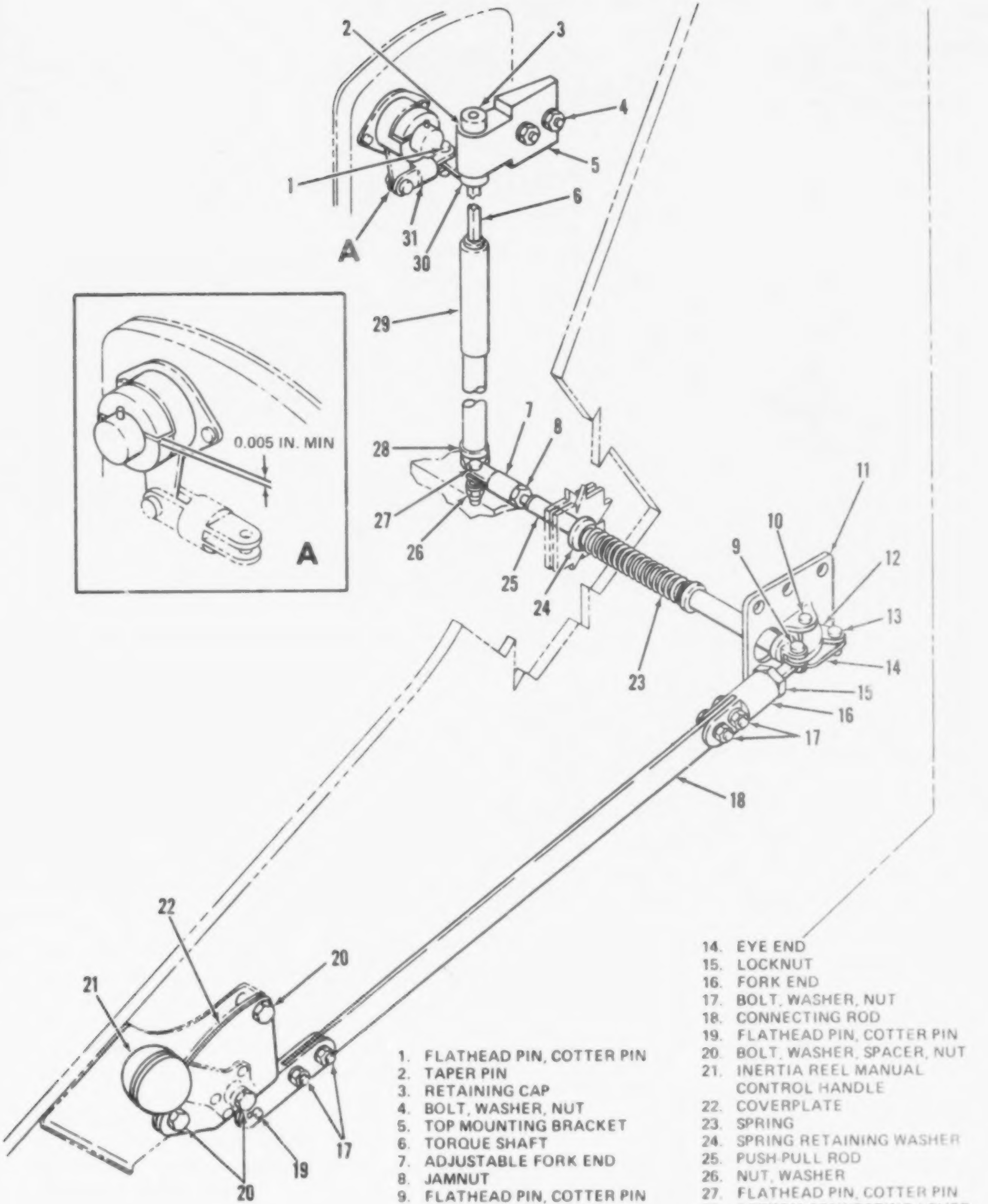
NOTE

If the inertia reel manual control handle (21) fails to bottom out correctly, the length of connecting rod (18) must be adjusted by rotating the eye end (14). The gap (detail A, figure 5-10) must be measured only after linkage slack has been removed by pushing forward on inertia reel control fork (31). The seat bucket must be in the up position in order to obtain access to the jamnut (8). If the gap (detail A) is less than 0.005 inch, the linkage relationship between connecting rod (18) and push-pull rod (25) is too long. Conversely, if the gap is excessive (e.g., 0.040 inch), the linkage is too short.

(6) Remove flathead pin and cotter pin (13) securing connecting rod (18) to bellcrank lever (12).

(7) Pull connecting rod (18) out of engagement with bellcrank lever (12) to give access to flathead pin and cotter pin (9).

(8) Remove flathead pin and cotter pin (9) securing push-pull rod (25) to bellcrank lever (12).



1. FLATHEAD PIN, COTTER PIN
2. TAPER PIN
3. RETAINING CAP
4. BOLT, WASHER, NUT
5. TOP MOUNTING BRACKET
6. TORQUE SHAFT
7. ADJUSTABLE FORK END
8. JAMNUT
9. FLATHEAD PIN, COTTER PIN
10. FLATHEAD PIN, COTTER PIN
11. BELLCRANK SUPPORT BRACKET
12. BELLCRANK LEVER
13. FLATHEAD PIN, COTTER PIN
14. EYE END
15. LOCKNUT
16. FORK END
17. BOLT, WASHER, NUT
18. CONNECTING ROD
19. FLATHEAD PIN, COTTER PIN
20. BOLT, WASHER, SPACER, NUT
21. INERTIA REEL MANUAL CONTROL HANDLE
22. COVERPLATE
23. SPRING
24. SPRING RETAINING WASHER
25. PUSH-PULL ROD
26. NUT, WASHER
27. FLATHEAD PIN, COTTER PIN
28. BOTTOM CONNECTING LEVER
29. TORQUE TUBE
30. END FITTING
31. INERTIA REEL CONTROL FORK

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Figure 5-10. Inertia reel manual control linkage

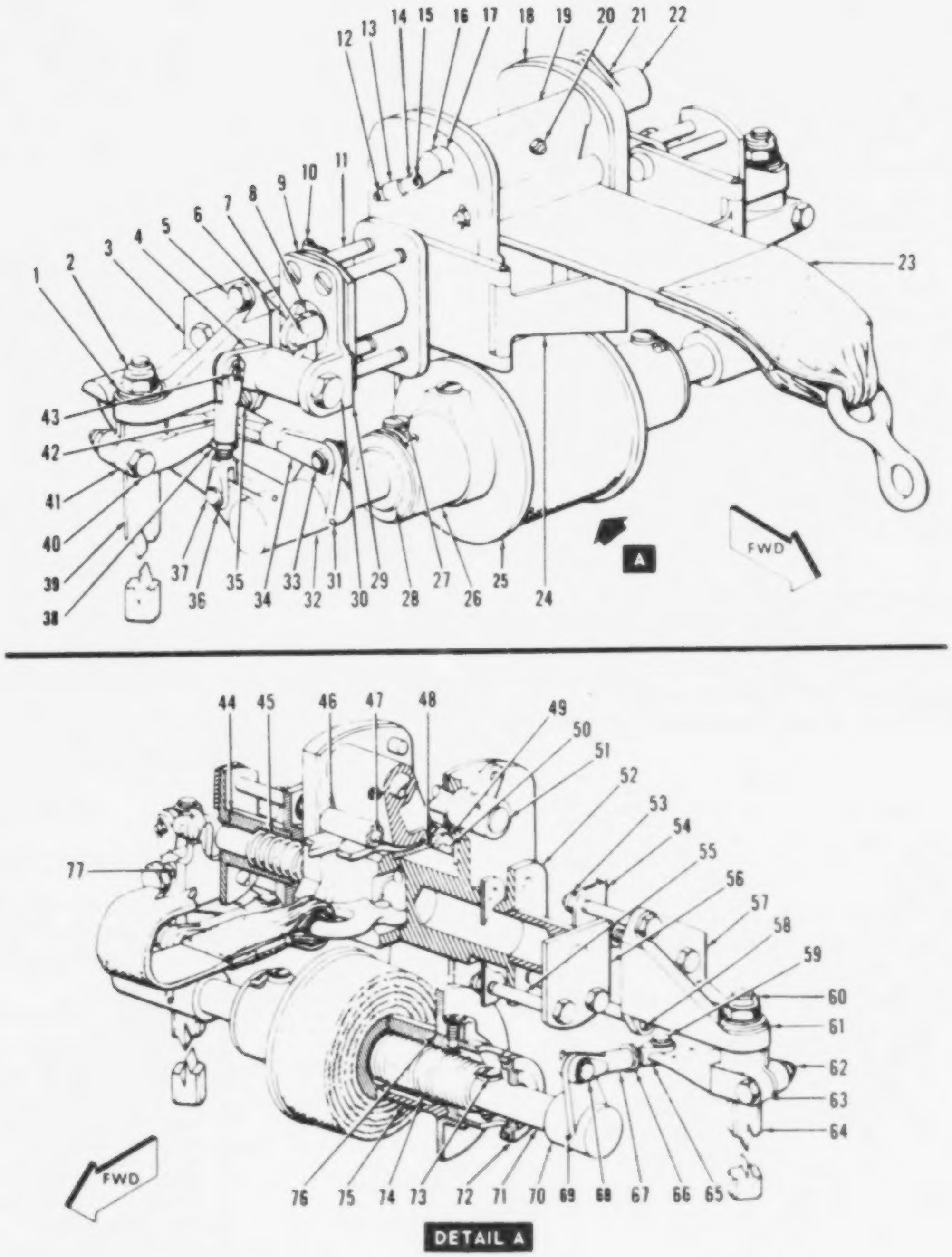

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Figure 5-11. Inertia reel mechanism disassembly (Sheet 1 of 2)

KEY to figure 5-11.

1. Bearing
2. Locknut, washer
3. Support bracket
4. Plunger bellcrank
5. Bolt, washer, locknut
6. Roller
7. Pivot pin
8. Locking plunger subassembly
9. Plunger housing
10. Mounting bracket
11. Bolt, washer, locknut
12. Cotter pin
13. Locking sleeve
14. Locking piston
15. Pivot pin
16. Taper pin
17. Locking lever
18. Harness beam assembly
19. Snubber
20. Locknut and taper pin
21. Operating lever
22. Taper pin
23. Loop strap
24. Parachute restraint strap spreader assembly
25. Inertia reel flange
26. Loop strap drum
27. Screw, washer
28. Bearing
29. Mounting bracket
30. Bolt, washer, locknut
31. Taper pin
32. Lever
33. Flathead pin, cotter pin
34. Link
35. Screw, washer, locknut
36. Eye end
37. Flathead pin, cotter pin
38. Locknut
39. Torsion bar
40. Bolt, washer, locknut
41. Lever
42. Fork end
43. Flathead pin, cotter pin
44. Plunger
45. Spring
46. Roller
47. Cotter pin, pin
48. Insert
49. Roller
50. Cotter pin, pin
51. Shaft
52. Harness beam subassembly
53. Bolt, washer, locknut
54. Mounting bracket
55. Bolt, washer, locknut
56. Plunger housing
57. Support bracket
58. Screw, washer, locknut
59. Flathead pin, cotter pin
60. Locknut, washer
61. Bearing
62. Bolt, washer, locknut
63. Lever
64. Torsion bar
65. Eye end
66. Locknut
67. Fork end
68. Flathead pin, cotter pin
69. Taper pin
70. Lever
71. Shaft
72. Bearing
73. Screw, washer, locknut
74. Spring
75. Strap retainer
76. Screw, washer
77. Bearing

Figure 5-11. Inertia reel mechanism disassembly (Sheet 2 of 2)

(9) Back off jamnut (8) of push-pull rod (25).

(10) Adjust (half a turn at a time) on push-pull rod (25) until the correct clearance on the torque dogs is achieved (detail A).

NOTE

With each half-turn adjustment it will be necessary to connect the push-pull rod (25) and connecting rod (18) to the bellcrank lever (12) with the flathead pins only (no cotter pins required during the adjustment phase). In addition the procedures in (2), (3), (4) and (5) must be repeated with each progressive half turn adjustment. This step-by-step method must be carried out until a final adjustment gives the smallest gap within the tolerance of not less than 0.005 inch.

(11) Tighten up jamnut (8) of push-pull rod (25).

(12) Using new cotter pins, assemble linkage as follows:

(a) Install flathead pin and cotter pin (9) securing push-pull rod (25) to bellcrank lever (12).

(b) Engage connecting rod (18) into bellcrank lever (12).

(c) Install flathead pin and cotter pin (13) securing connecting rod (18) to bellcrank lever (12).

(13) Carry out a functional check of inertia reel mechanism in accordance with paragraph 4-6f.

(14) For troubleshooting procedures, refer to table 5-1.

Table 5-1. Troubleshooting, DS and GS Maintenance

Malfunction	Probable Cause	Corrective Action
Loop straps do not release until manual override handle engages aft strap.	Lower adjustment rod tubes too long.	Shorten lower adjustment rod tubes on bottom of ejection seat. (Refer to paragraph 5-18.)
Leg restraint cords release before or at the same time as seat restraint system releases.	Lower adjustment rod tubes too short.	Lengthen lower adjustment rod tubes on bottom of ejection seat. (Refer to paragraph 5-18.)
Rigid seat restraint lugs do not release at the same time.	Adjustment link on left-hand side of main beam and below drogue gun, out of adjustment.	If left lug releases first, shorten adjustment link on left side of main beam. If right lug releases first, lengthen adjustment link on left side of main beam. (Refer to paragraph 5-18.)
Leg restraint cord will not lock into leg restraint locks.	Broken spring or worn plunger in leg restraint cord lock.	Replace dual leg restraint cord lock. (Refer to paragraph 5-12.)
Inertia reel manual control handle fails to unlock loop straps.	Inertial reel linkage too long.	Adjust inertia reel manual control linkage. (Refer to paragraph 5-15*b*.)
No manual lock or autolock for inertia reel manual control.	Inertia reel linkage too short.	Adjust inertia reel manual control linkage. (Refer to paragraph 5-15*b*.)
Loop strap snubber counterweight does not contact counterweight strap.	Inertia reel linkage too short.	Lengthen inertia reel manual control linkage. (Refer to paragraph 5-15*b*.)

5-16. Inertia Reel Manual Control Handle.

The inertia reel manual control handle is a three-position control located aft of the leg restraint cord lock release handle on the left side of the seat bucket. When placed in the spring-loaded autolock position, the inertia reel manual control handle allows the harness loop straps to extend and retract. The forward lock position allows retraction only.

a. Removal.

(1) Remove bolt, washer, spacer, and nut (20, figure 5-10) and remove cover plate (22) from seat bucket.

(2) Remove flathead pin and cotter pin (19) and bolt, washer, nut (17) attaching inertia reel manual control handle (21) to connecting rod (18) and remove handle.

b. Inspection.

(1) Inspect inertia reel manual control handle for damage, corrosion, and excessive wear.

(2) Inspect all attaching parts for burrs, damaged threads, split washers, and cracked or sheared flathead pin.

c. Repair or Replacement. Repair of the inertia reel manual control handle consists of replacing defective components.

d. Installation.

(1) Place inertia reel manual control handle (21, figure 5-10) on end of connecting rod (18) and secure handle with flathead pin and cotter pin (19) and bolt, washer, nut (17).

(2) Install bolt, washer, spacer, and nut (20) securing coverplate (22) to seat bucket.

5-17. Inertia Reel Mechanism.

The inertia reel mechanism (figure 5-11), located underneath and behind the central support bracket, consists of four major parts: a harness, loop strap (23), a snubber (19), and a dual spring-loaded loop strap retraction reel. The inertia reel mechanism provides a means of retention for the upper portion of the occupant's harness. The loop strap, which is rolled onto a retraction reel, passes through the snubber and through the parachute roller yoke on the personnel parachute. The free end of the loop strap, which contains a lug, is then inserted into the harness lock. The snubber prevents forward movements of the occupant when the occupant exceeds 2 to 3 g's force parallel to the main beam, or when the inertia reel manual control handle is in the forward (locked) position. The retraction reel takes up slack in the loop strap when the occupant sits back. The occupant cannot lean forward until he places the inertial reel manual control handle to the aft (unlocked) position.

a. *Removal.*

(1) Remove bolt, washer, and nut that secure back plate to head box.

(2) Remove flathead pins and cotter pins (68 and 59, figure 5-11) that secure fork end (67) and eye end (65) to levers (63 and 70). Separate fork end and eye end and remove locknut (66).

(3) Remove torsion bar (64) which is secured by locknut and washer (60), and remove bearing (61), bolt, washer, and locknut (62), and lever (63).

(4) Remove bolt, washer, and locknut (53), screw, washer and locknut (58), support bracket (57), and mounting bracket (54).

b. *Disassembly.*

(1) Drift out taper pin (69, figure 5-11) and remove lever (70).

(2) Remove bolts, washers, and locknuts (55), and remove plunger housing (56).

(3) Remove flathead pins and cotter pins (43 and 37) that secure fork end (42) to plunger bellcrank (4) and eye end (36) to lever (32). Separate fork end from eye end and remove locknut (38).

(4) Remove bolt, washer, and locknut (30), bearing (77), and plunger bellcrank (4).

(5) Remove link (34) which is secured by flathead pins and cotter pins (33).

(6) Remove torsion bar (39) which is secured by locknut and washer (2), and remove bearing (1), bolt, washer, and locknut (40), and lever (41).

(7) Remove bolt, washer, and locknut (5), screw, washer, and locknut (35), support bracket (3), and mounting bracket (10).

(8) Remove lever (32), which is secured to shaft (71) by taper pins (31).

(9) Remove bolts, washers, and locknuts (11) and mounting bracket (29). Remove locking plunger subassembly (8), plunger housing (9), spring (45), plunger (44), and parachute restraint strap spreader assembly (24). Drift out pivot pin (7) and remove roller (6).

(10) Remove loop strap (23) by removing screws and washers (76); loosen inertia reel flange (25); rotate snubber (19) aft and remove flange retaining screw from flange (25).

(11) Pull loop strap off drum and remove loop strap (23) from loop strap retainer (75) and pull loop strap past snubber (19). Slide inertia reel flange (25) outboard away from loop strap (23).

(12) Remove loop strap retainer (75) and pull loop strap (23) past snubber (19).

(13) Remove taper pin (22) and operating lever (21). Remove locknut and taper pin (20) securing snubber (19) to shaft (51). Remove taper pin (16) securing locking lever (17) to shaft (51) and remove shaft and snubber.

(14) Remove locking lever (17) and locking piston (14) from locking sleeve (13). Remove spring which is housed in locking sleeve (13), and separate locking piston (14) from locking lever (17) by removing pivot pin (15). Remove locking sleeve (13) by removing cotter pin (12).

(15) Remove rollers (46 and 49), which are secured by cotter pins and pins (47 and 50), and remove insert (48).

(16) Remove screw, washer, and locknut (73), screw and washer (27), inertia reel flange (25) bearings (28 and 72), spring (74), and loop strap drum (26).

c. *Cleaning.*

(1) Clean all removed components, except the loop strap, in drycleaning solvent (item 6, table 1-2).

(2) Dry component parts with clean, filtered, compressed air.

d. Inspection.

(1) Inspect all hardware for stripped threads.

(2) Inspect all mounting brackets and components for elongated mounting holes, cracks, and for bright areas, indicating binding.

(3) Inspect harness release roller for evidence of wear.

(4) Inspect shafts for defects and evidence of wear.

(5) Inspect loop strap for fraying, broken stitches, and cuts.

NOTE

Frayed loop strap edges 1/8-inch maximum both sides are considered serviceable.

(6) Inspect plunger spring and torsion spring to see if they are broken, stretched, or bent.

e. Repair or Replacement.

(1) Replace all taper pins removed during disassembly.

(2) Replace any worn, mutilated, or loose fitting bearings.

(3) Replace any springs found to be damaged.

(4) Replace loop strap if cut or if excessively frayed.

f. Lubrication. Apply a light coating of lubricating oil (item 2, table 1-2) to all moving parts prior to reassembly.

g. Reassembly.

(1) Position loop strap drum (26, figure 5-11) and slide spring (74) over shaft (71); then install shaft, and secure spring on shaft with screw, washer, and locknut (73).

(2) Install bearings (28 and 72) and inertia reel flange (25) on shaft (71).

NOTE

Do not secure inertia reel flange (25) to loop strap drum (26) at this time.

(3) Install rollers (46 and 49) and secure with pins and cotter pins (47 and 50). Install insert (48).

(4) Install operating lever (21) on shaft (51) and secure with taper pin (22). Position snubber (19) and install shaft (51); then secure snubber to shaft with locknut and taper pin (20). Install locking sleeve (13) and secure with cotter pin (12); then insert spring in locking piston (14) and insert locking piston in locking sleeve (13). Position locking lever (17) on shaft (51); then secure to shaft with taper pin (16), and to locking piston (14) with pivot pin (15).

(5) Insert loop strap (23) under roller (46) and snubber (19), and over roller (49). Insert strap retainer (75) in end of loop strap (23). Install inertia reel flange (25) and loop strap (23) on strap retainer (75) and slide inertia reel flange (25) out on loop strap drum (26) so that drum screw hole is visible.

(6) Rotate loop strap drum (26) clockwise (as viewed from the right side) until fully tight; back off one-half turn. Holding loop strap drum firmly, insert loop strap (23) with strap retainer (75) in slot in loop strap drum. Release loop strap drum slowly until loop strap is wound on drum.

CAUTION

Holes must align; otherwise, screws securing flanges to drum will be sheared.

(7) Slide inertia reel flange (25) in on loop strap drum (26) until holes align, and secure flange to drum with screw and washer (76). Secure spring (74) to drum with screw and washer (27). Install flange retaining screw.

(8) Insert roller (6) in slot of locking plunger subassembly (8) and secure with pivot pin (7). Insert spring (45), plunger housing (56 and 9), and mounting bracket (29), and secure to harness beam assembly (18) with bolts, washers, and locknuts (55 and 11). Install plunger (44).

(9) Install lever (32) on shaft (71) with taper pins (31).

(10) Install support and mounting brackets (3 and 10), and secure with screw, washer, and locknut (35).

(11) Position plunger bellcrank (4), insert bearing (77), and secure with bolt, washer, and locknut (30).

(12) Screw locknut (38) on eye end (36) and screw eye end into fork end (42). Position fork end on plunger bellcrank (4) and secure with flathead pin and cotter pin (43). Position eye end on lever (32) and secure with flathead pin and cotter pin (37).

(13) Position lever (41) and insert torsion bar (39) through lever and support bracket (3), then insert bearing

(1) and secure torsion bar with washer and locknut (2) and bolt, washer, and locknut (40).

(14) Position link (34) and secure to levers (41 and 32) with flathead pins and cotter pins (33).

(15) Install lever (70) on shaft (71) and secure with taper pin (69).

h. Installation.

(1) Install mounting bracket (54) and support bracket (57) and secure with bolt, washer, and locknut (53) and screw, washer, and locknut (58).

(2) Position lever (63) and insert torsion bar (64) through lever and support bracket (57); then insert bearing (61) and secure torsion bar with washer and locknut (60) and bolt, washer, and locknut (62).

(3) Screw locknut (66) on eye end (65) and screw eye end in fork end (67). Secure fork end to lever (70) and eye end to lever (63) with flathead pins and cotter pins (68 and 59).

(4) Install bolt, washer, and nut securing backplate to head box.

i. Maintenance Operational Check.

(1) Place inertia reel manual control handle (21, figure 5-10) in center (autolock) position.

(2) Pull loop strap out to its extreme position.

(3) Move inertial reel manual control handle to forward (locked) position.

(4) Slowly allow loop strap to retract a few inches at a time; then pull forward on loop strap to see if the loop strap locks.

(5) Repeat procedure in preceding step (4) until loop strap is fully retracted.

(6) Move inertia reel manual control handle to center (autolock) position and pull on loop strap. Loop strap should be locked.

(7) Move inertia reel manual control handle to aft (unlocked) position and release handle. Handle should move to center (autolock) position.

NOTE

The inertial reel manual control handle is spring-loaded to the center (autolock) position.

(8) Pull loop strap out to its fully extended position and release loop strap slowly. Loop strap should completely retract.

(9) Move inertia reel manual control handle to forward (locked) position and check to see that snubber contacts loop strap across the entire surface of loop strap.

(10) Move inertia reel manual control handle to aft (unlocked) position and allow handle to return to center (autolock) position. Ensure snubber hits stop on main beam assembly.

(11) Place inertia reel manual control handle to aft (unlocked) position, and withdraw loop strap approximately 2 feet.

(12) Release inertia reel manual control handle.

(13) With loop strap partially extended, manually press snubber against the loop strap.

(14) Holding tension on loop strap, measure distance between lever and end stop. (See detail A, figure 5-11.) Clearance must be 0.005 inch minimum.

NOTE

Reference paragraph 5-16 for corrective action.

5-18. Manual Override System.

The manual override system consists of interlinked push rods and torsion rods which actuate the following controls:

a. Control Actuation.

(1) Breech link (4, figure 5-8) withdraws guillotine initiator sear (5).

(2) Locking plungers (46) lock and unlock the cord fittings (6, figure 1-8).

(3) Locking plunger (38, figure 5-8) locks and unlocks the lower firing handle (36).

(4) Plungers (18) lock and unlock rigid seat retention lugs (7, figure 4-36).

(5) Plunger (44, figure 5-11) locks and unlocks the loop strap lug.

(6) Plunger pin (30, figure 5-2) locks and unlocks the body of the face blind.

b. Operational Sequence. When the manual override handle is moved up and aft, the following actions should occur in sequence:

(1) The guillotine initiator sear should withdraw from its firing mechanism.

(2) The leg restraint cords should be released at the cord lock fittings first.

(3) The rigid seat lugs should next release simultaneously.

(4) The loop strap lug is released last.

(5) Locking of the face blind and lower firing handle may occur anytime between steps (1) and (4) above.

c. Rigging Standard. With the manual override handle (1, figure 5-8) in the forward and down (locked) position, the plungers (18) and plunger (44, figure 5-11) should bottom out against their housings. The end of the plungers should touch the housing and there should be no clearance. With the manual override handle in the up and aft (unlocked) position, the plunger (44) should be withdrawn so that the end of the plunger is recessed in the housing by at least 1/16 inch. Plungers (18, figure 5-8) should recess at least 1 32 inch. When moving the handle from down (locked) to up and aft (unlocked) position, both plungers (18) must withdraw within their housings simultaneously.

NOTE

Adjustment to the loop strap lug locking plunger or side plate locking plungers requires the personnel parachute, RSSK assembly, and parachute back plate be removed. In addition, the seat must be mounted horizontally on the seat maintenance cradle.

d. Loop Strap Locking Plunger Adjustment. If plunger (44, figure 5-11) is out of adjustment or fails to release the loop strap lugs properly, proceed as follows:

(1) Place the manual override handle in the forward (locked) position.

(2) Remove cotter pin (10, figure 5-2), washer (11) and clevis pin (12) from plunger assembly (13). Disconnect plunger assembly from plunger bellcrank (4, figure 5-11).

(3) Back off locknut (38) and push down on bellcrank lever in order to adjust fork end (42) until plunger (44) recesses not less than 1/16 inch in its housing when manual override handle is moved to aft (unlocked) position. Check that end of plunger bottoms out on housing body when manual override handle is in forward (locked) position.

NOTE

The fork end (42) must be adjusted 1/2 a turn at a time. After each 1/2 turn adjustment, the clevis pin (12, figure 5-2) must connect the fork end (42, figure 5-11) to plunger bellcrank (4). After connecting the fork end to plunger bellcrank, the adjustment related to the locked and unlocked position of the manual override handle can be checked on each turn of fork end.

(4) When correct adjustment has been achieved, tighten locknut (38) and assemble in reverse order.

(5) Verify that face blind locking mechanism linkage has not affected the plunger (44) adjustment when plunger assembly (13, figure 5-2) is connected to fork end (42, figure 5-11) and plunger bellcrank (4).

e. Rigid Seat Restraint Lug Adjustment. If the plungers (18, figure 5-8) are out of adjustment or fail to release the side lugs simultaneously, proceed as follows:

(1) Place the manual override handle in the down (locked) position.

(2) Disconnect lower adjustment rod tubes (24) from torsion tube levers (21).

(3) Remove flathead pin and cotter pin (68, figure 5-11).

(4) Back off locknut (66).

(5) Adjust fork end (67) by 1/2 turn at a time until the plunger (18, figure 5-8) meets the rigging standard established above.

NOTE

After each 1/2 turn adjustment of fork end (67, figure 5-11), it will be necessary to engage lever (70) to fork end (67) via flathead pin, cotter pin (68). By this step-by-step method, a check is made on every 1/2 turn adjustment until the rigging standard is achieved.

(6) Connect lower adjustment rod tubes (24, figure 5-8) to torsion tube levers (21).

NOTE

The lower adjustment rod tubes (24) must be adjusted to conform to the final adjustment achieved by fork end rod (67, figure 5-11). Any incorrect adjustment of lower tubes (24, figure 5-8) will prevent the plungers (18) from meeting the rigging standard. Normally, the first indication of maladjustment occurs when the plungers (18) fail to move simultaneously.

(7) When correct adjustment has been achieved, tighten locknut (66, figure 5-11) and assemble in reverse order.

f. Face Blind Locking Mechanism Adjustment. Refer to paragraph 5-5*h*.

NOTE

The face blind and lower firing handles do not have to lock in any given sequence. This function is satisfactory if the two handles are locked when the manual override handle is in the aft (unlocked) position.

If retention points do not release in sequence, refer to preceding subparagraph *b*. If both lap belt halves do not release simultaneously, refer to subparagraph *d* for corrective action.

5-19. Manual Override Handle.

The manual override handle (1, figure 5-8), located on the forward right side of the seat bucket, is a two-position handle, locked forward and down, unlocked up and aft. A trigger-type handle grip incorporates a spring-loaded locking mechanism. To actuate the manual override handle, the trigger and handgrip must be squeezed and pulled up and aft.

a. Removal.

(1) Remove cotter pin (8, figure 5-8) and flathead pin (9) securing operating rod (10) to manual override handle (1) and separate rod from handle.

(2) Remove cotter pin (16) and flathead pin (3) securing breech link (4) to manual override handle (1) and separate rod from handle.

(3) Remove nut (13), washer (14), bushing (15), and bolt (2) securing manual override handle (1) to mounting bracket, and remove handle.

b. Cleaning. Clean all parts with drycleaning solvent (item 6, table 1-2) and dry with a clean cloth or filtered compressed air.

c. Inspection.

(1) Inspect manual override handle for corrosion, cracks and wear.

(2) Inspect trigger and handgrip for spring tension and locking operation, free from binding.

(3) Inspect threaded parts for stripped threads.

d. Repair or Replacement. Repair of the manual override handle consists of replacement of defective components.

e. Installation.

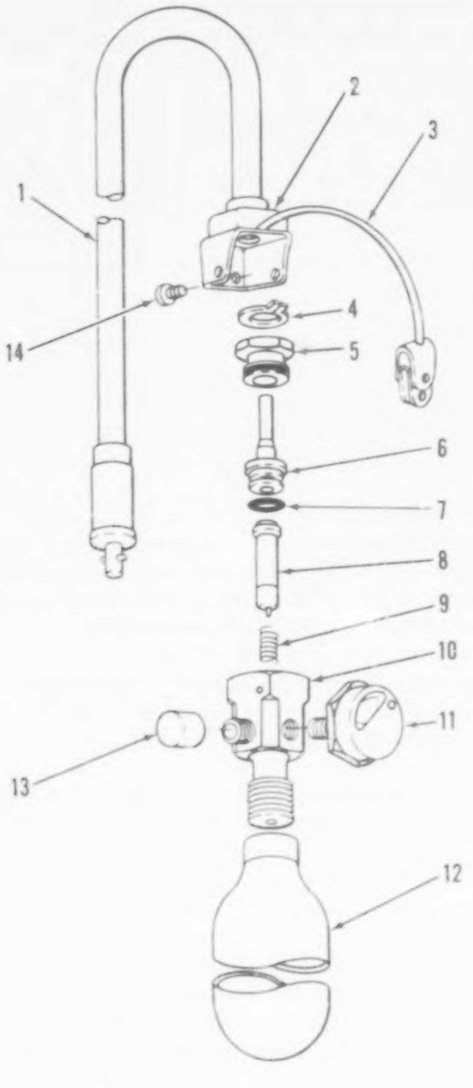
(1) Position manual override handle (1, figure 5-8) on mounting bracket and secure handle to bracket with bolt (2), bushing (15), washer (14), and nut (13).

(2) Align breech link (4) with manual override handle (1) and secure breech link to handle with flathead pin (3) and cotter pin (16).

(3) Align operating rod (10) with manual override handle (1) and secure rod to handle with flathead pin (9) and cotter pin (8).

5-20. Emergency Oxygen Bottle Assembly.

The oxygen cylinder (12, figure 5-12) is mounted on the right side of the seat bucket. The oxygen cylinder is equipped with a valve body assembly and pressure gage (11) and is filled to 1,800 to 2,000 psi with oxygen (item 7, table 1-2). During high altitude ejection, the occupant obtains oxygen from the cylinder, enabling him to descend to a safe altitude without the danger of loss of consciousness due to lack of oxygen. Oxygen from the emergency oxygen bottle assembly can also be used by the occupant if the aircraft's normal oxygen system fails during flight. The emergency oxygen bottle assembly consists primarily of an oxygen cylinder, a valve and body assembly and pressure gage, and a hose and connector assembly. The steel, shatterproof, high pressure oxygen cylinder (12) has an internal volume of 22.5 cubic inches. The oxygen cylinder is attached to the valve body assembly by a threaded connection. The valve body assembly consists of an oxygen pull cable housing, a pressure gage (11), and a valve. The pressure gage (11), which shows the oxygen pressure of the oxygen cylinder, has no scale calibration



1. HOSE AND CONNECTOR ASSEMBLY
2. PULL CABLE HOUSING
3. PULL CABLE ASSEMBLY
4. RETAINING RING
5. BUSHING
6. BREAKOFF NIPPLE
7. O-RING
8. FLOW RESTRICTOR
9. SPRING
10. VALVE BODY
11. PRESSURE GAGE
12. CYLINDER
13. DUST CAP
14. SCREW AND WASHER

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Figure 5-12. Emergency oxygen bottle assembly — exploded view

except a mark to denote pressure of 1,800 and 2,500 psi, and a scale divided into two segments, red and black. The gage pointer, when positioned in the black segment of the arc, indicates that the oxygen cylinder is charged to at least 1,800 psi. If the pointer is in the red segment, however, the oxygen cylinder content is too low for safe operation and the cylinder shall be recharged. The pressure gage is attached to the valve body (10) by a threaded connection. The oxygen pull cable housing (2), attached to the valve by four cadmium-plated screws and washers (14), is composed of a housing base, pull cable, and a cable link. The valve body assembly consists of a valve body (10), which encases a flow restrictor (8), a breakoff nipple (6), a bushing (5), and filling nipple. The flow restrictor (8), consisting of a tubular body into which is secured a ceramic plug and a filter, controls the flow of oxygen from the oxygen cylinder to the mask. It is calibrated to discharge the cylinder pressure of 1,800 psi at a predetermined flow rate of from 10 to 12 liters at 77 °F (25 °C) during the first minute; and approximately 1 liter during the tenth minute of flow. Ten minutes is considered the maximum flow period for a cylinder charged to 1,800 psi. The brass breakoff nipple (6), consisting of a seat, a flange, and a hollow tip, provides a leaktight seal until thy tip is broken. The bushing (5), when tightened, forces the breakoff nipple (6) and the flow restrictor (8) into operating position. When the emergency oxygen system is activated, the ring encircling the rubber hose and nipple is pulled over in its housing and the end of the nipple is fractured at the machined undercut, allowing oxygen to flow at full operating pressure from the cylinder through the flow restrictor. Oxygen leakage is prevented by the metal-to-metal seat between the flow restrictor and the valve body. The hose and connector assembly (1) is composed of a rubber hose and bayonet connector.

CAUTION

Do not activate cylinder by pulling the pull cable.

a. *Service Upon Receipt of Oxygen Cylinder.* The oxygen cylinder may be issued with only enough oxygen pressure to prevent atmospheric air from entering the cylinder and causing condensation, corrosion, or rust. The fact that an oxygen cylinder is received empty or with only a small amount of pressure does not necessarily mean that the oxygen cylinder is leaking. Before the cylinder can be filled with oxygen, any oxygen already present in the cylinder must be discharged and the cylinder purged of all air and moisture. Purge, service, and leak-test cylinder as soon as oxygen has been discharged from cylinder.

b. Purging Oxygen Cylinder. Purge the cylinder (12, figure 5-12) as follows:

(1) *Cylinder with 15 to 20 psi remaining.*

WARNING

Do not allow any oil or grease to come in contact with compressed oxygen, as the slightest trace of oil or grease may cause an explosion. Clean hands, clothes, and tools of all foreign matter to ensure against contamination.

(a) Remove four screws and washers (14) that secure oxygen pull cable housing (2); slide housing along hose and connector assembly (1) well out of the way.

(b) Remove dust cap (13) from filling nipple.

WARNING

Ensure that the recharging cylinder contains only oxygen (item 7, table 1-2). Do not charge emergency oxygen bottle with anything else.

(c) Connect filling fixture (2, figure 5-13) to recharging cylinder (1) first, and then connect other end to cylinder filling nipple.

NOTE

If filling fixture (2) is connected to a partially filled oxygen cylinder, the oxygen may flow out.

(d) Unscrew bushing (5, figure 5-12) one-fourth turn.

CAUTION

Loosening bushing more than one-fourth turn will allow oxygen in the cylinder to escape past the bushing during the charging operation.

(e) Open recharging cylinder valve slightly to allow oxygen to flow into cylinder (12). When pressure reading on gage shows approximatley 400 to 600 psi, close recharging cylinder valve.

CAUTION

Do not allow oxygen pressure to fall below 15 psi in the oxygen cylinder during purging.

(f) Loosen nut at either end of filling fixture (2, figure 5-13) to permit oxygen to escape slowly.

(g) Tighten filling fixture (2) nut and repeat operation twice more to assure proper purging.

(h) After purging, slowly open valve on recharging cylinder (1) and allow pressure in cylinder (3) to reach 2,000 psi, then close recharging cylinder (1) valve.

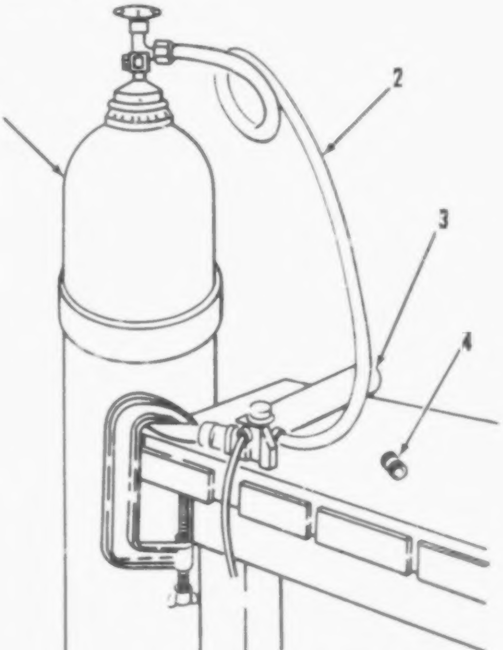
NOTE

Cylinder (3) will become warm during filling operation and lose pressure after it cools to room temperature.

(i) Allow cylinder (3) to cool to room temperature; then check pressure gage (11, figure 5-12). Pressure must not be less than 1,800 psi.

NOTE

Pressure in cylinder must be between 1,800 and 2,000 psi at a temperature of 77°F (25°C). Release or add oxygen to stay within this range. A change in temperature will cause a change in pressure at a rate of 3.5 psi for each degree Fahrenheit.



1. RECHARGING CYLINDER
2. FILLING FIXTURE
3. CYLINDER
4. LEAK-TEST CAP

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Figure 5-13. Recharging setup for emergency oxygen bottle (typical)

(j) Tighten bushing (5) to a torque of 180 inch-pounds.

(k) Unscrew filling fixture (2, figure 5-13) from cylinder and replace with leak-test cap (4), Part No. 212A31.

(l) Leak-test cylinder. (Refer to subparagraph *d.*)

(2) *Cylinder with less than 15 psi remaining.*

WARNING

Do not allow any oil or grease to come in contact with compressed oxygen, as the slightest trace of oil or grease may cause an explosion. Clean hands, clothes, and tools of all foreign matter to ensure against contamination.

(a) Loosen cylinder valve body assembly and allow any trapped oxygen to escape.

CAUTION

Do not place cylinder in a vise unless protected by wooden blocks or equivalent. Damage to the cylinder walls is cause for rejection.

(b) Remove valve body assembly from cylinder (12, figure 5-12).

(c) Inspect inside of cylinder (12) for moisture accumulation and rust.

NOTE

Any evidence of rust is cause for rejection of cylinder (12).

(d) Connect filling fixture (2, figure 5-13) to recharging cylinder (1) and blow out inside of oxygen cylinder.

WARNING

Ensure that the recharging cylinder contains only oxygen (item 7, table 1-2). Do not recharge oxygen cylinder with anything else.

(e) Install valve body assembly into cylinder.

(f) Remove four screws and four washers (14, figure 5-12) and washers that secure oxygen pull cable housing (2); slide housing along hose and connector assembly (1) well out of the way.

(g) Remove dust cap (13) from filling nipple.

NOTE

If filling fixture (2) is connected to a partially filled cylinder, the oxygen may flow out.

(h) Connect filling fixture (2, figure 5-13) to recharging cylinder (1) first and then connect other end to cylinder filling nipple.

NOTE

Loosening bushing more than one-fourth turn will allow oxygen in the cylinder to escape past the bushing during the recharging operation.

(i) Unscrew bushing (5, figure 5-12) one-fourth turn.

(j) Open recharging cylinder valve slightly to allow oxygen to flow into cylinder (3, figure 5-13). When pressure reading on pressure gage shows approximately 400 to 600 psi, close recharging cylinder valve.

CAUTION

Do not allow oxygen pressure to fall below 15 psi in the cylinder during purging.

(k) Loosen nut at either end of filling fixture (2) to permit oxygen to escape slowly.

(l) Tighten recharging cylinder nut and repeat operation twice more to assure proper purging.

(m) After purging, slowly open recharging cylinder and allow pressure in cylinder to reach 2,000 psi; then close recharging cylinder valve.

NOTE

Cylinder will become warm during filling operation and will lose pressure after it cools to room temperature.

(n) Allow cylinder (3) to cool to room temperature; then check pressure gage (11, figure 5-12). Pressure must not be less than 1,800 psi.

NOTE

Pressure in cylinder must be between 1,800 and 2,000 psi at the temperature of 77°F (25°C). Release or add oxygen to stay within this range. A change in temperature will cause a change in pressure at a rate of 3.5 psi for each degree Fahrenheit.

(o) Tighten bushing (5) to a torque of 180 inch-pounds.

(p) Unscrew filling fixture (2, figure 5-13) from cylinder and replace with leak-test cap (4), Part No. 212A31.

(q) Leak-test cylinder. (Refer to subparagraph d.)

c. *Servicing.* If the pressure gage (11, figure 5-12) shows an oxygen pressure of more than 20 psi but less than 1,800 psi, proceed as follows:

NOTE

The cylinder must be purged if oxygen pressure is 20 psi or less.

(1) Remove screws and washer (14) from valve body (10), and slide pull cable housing (2) and attached parts along hose and connector assembly (1) well out of the way.

WARNING

Do not allow any oil or grease to come in contact with compressed oxygen, as the slightest trace of oil or grease may cause an explosion. Clean hands, clothes, and tools of all foreign matter to ensure against contamination.

(2) Remove dust cap (13) from filling nipple on valve body (10).

WARNING

Ensure that the recharging cylinder contains only oxygen (item 7, table 1-2). Do not charge emergency oxygen cylinder with anything else.

NOTE

If filling fixture is connected to a partially filled cylinder, the oxygen may flow out.

(3) Connect filling fixture (2, figure 5-13) to recharging cylinder (1) first, and then connect other end to cylinder breakoff nipple (6, figure 5-12).

CAUTION

Loosening bushing more than one-fourth turn will allow oxygen in the cylinder to escape past the bushing during the charging operation.

(4) Unscrew bushing (5) one-fourth turn.

(5) Slowly open valve on recharging cylinder (1, figure 5-13) and allow pressure in oxygen cylinder to reach 2,000 psi; then close recharging cylinder valve.

NOTE

Oxygen cylinder will become warm during filling operation and will lose pressure after it cools to room temperature.

(6) Allow cylinder (3) to cool to room temperature, then check pressure gage (11, figure 5-12). Pressure must not be less than 1,800 psi.

NOTE

Pressure in cylinder must be between 1,800 and 2,000 psi at a temperature of 77°F (25°C). Release or add oxygen to stay within this range. A change in temperature will cause a change in pressure at a rate of 3.5 psi for each degree Fahrenheit.

(7) Tighten bushing (5, figure 5-12) to a torque of 180 inch-pounds.

(8) Unscrew filling fixture (2, figure 5-13) from cylinder and replace with leak-test cap (4), Part No. 212A31.

(9) Leak-test the oxygen cylinder. (Refer to following subparagraph d.)

d. *Leak-Testing Cylinder.*

(1) Using a mild, water mixed solution of detergent (hand-dishwashing compound), check for leaks between valve body (10, figure 5-12) and cylinder (12), valve body (10) and pressure gage (11) and at leak-test cap (4, figure 5-13) bleed hole.

(2) Carefully tighten components suspected of contributing to observed leakage, and repeat preceding step (1).

NOTE

If leaks cannot be eliminated by tightening or replacing parts, replace with a serviceable emergency oxygen bottle assembly.

(3) If leakage is still detected, replace suspected defective parts and repeat preceding step (1).

e. Inspection.

(1) Check that pressure gage (11, figure 5-12) reads at least 1,800 psi at an ambient temperature of 77°F (25°C). A change in temperature will cause a change in pressure at a rate of 3.5 psi for each degree Fahrenheit.

NOTE

If the pressure gage reads zero psi, this is an indication that a leak exists or that the breakoff nipple (6) is ruptured.

(2) Inspect pressure gage (11) for cracked or broken cover glass, dents, or other visible defects.

(3) Inspect pull cable housing (2) for deformity and interference with or binding on pull cable.

(4) Inspect shear rivet in cable link for signs of shearing.

(5) Inspect hose for cuts, breaks, or deterioration, and for proper connection to bayonet connector.

(6) Inspect oxygen hose quick-disconnect bridle and lanyard for cracks and deformation.

f. Repair or Replacement. Replace all items found defective during inspection.

(1) Replace pull cable housing (2, figure 5-12) if pull cable, or pull cable housing rivets show signs of damage.

(2) If cable link shear rivet shows signs of shearing or has been sheared, replace rivet as follows:

CAUTION

Use extreme caution when removing an unserviceable rivet to avoid enlarging the hole.

(a) Clear holes in cable link that contain unserviceable rivet parts.

WARNING

To ensure proper shearing characteristics on ejection, use rivet, Part No. MS20470A2-6, only. Incorrect rivet may cause malfunction of emergency oxygen system.

(b) Align lower link in upper link and position spacer in lower link. Insert shear rivet through link and spacer, assuring that rivet head faces right side of aircraft.

CAUTION

Avoid using unnecessary force on links when bucking to prevent distorting links and rivet.

(c) Buck rivet using a small, thick bucking bar.

(3) If oxygen cylinder is partially filled (less than 1800 psi), proceed as follows:

(a) Service oxygen cylinder. (Refer to subparagraph *c*.)

(b) Leak-test oxygen cylinder. (Refer to subparagraph *d*.)

(4) If hose and connector assembly (1, figure 5-12) requires replacement, proceed as follows:

(a) Remove screws and washers (14) from valve body (10), and slide pull cable assembly (3) and attached parts along hose and connector assembly (1) well out of the way.

(b) Loosen bushing (5) enough to permit oxygen to start escaping. As cylinder pressure is gradually reduced, bushing may need to be loosened approximately one and one-half turns to allow all oxygen to escape from cylinder.

(c) Remove breakoff nipple (6) from hose and connector assembly (1).

(d) Replace O-ring (7).

(e) Insert breakoff nipple (6) into new hose and connector assembly (1) and work it in until flanged face seats firmly against hose end.

(f) Holding hose and connector assembly (1), work bushing (5) down until it seats firmly against face of breakoff nipple (6).

CAUTION

Ensure that parts do not fall on floor or come in contact with any foreign matter when inverting cylinder.

(g) Invert cylinder (12) so that flow restrictor (8) and spring (9) drop out of valve body (10).

CAUTION

Use only oxygen (item 7, table 1-2) to blow out valve body. Do not use compressed air.

(h) Inspect interior of valve body (10) for foreign matter. If necessary, blow clean, using oxygen (item 7, table 1-2).

(i) Insert spring (9) and flow restrictor (8) into valve body (10).

(j) Check that flange of breakoff nipple (6) is properly seated against bushing (5). Screw bushing into valve body (10) only enough to snug up parts. Do not tighten beyond a snug fit.

(k) Purge oxygen cylinder. (Refer to subparagraph *b*.)

(l) Service oxygen cylinder. (Refer to subparagraph *c*.)

(m) Tighten bushing (5) to a torque of 180 inch-pounds.

(n) Leak-test oxygen cylinder. (Refer to subparagraph *d*.)

(o) Slide pull cable housing (2) down hose and connector assembly (1), over top of valve body, and secure with screws and washer (14).

5-21. Emergency Oxygen System Linkage.

An actuating cable from the oxygen cylinder is attached by three links, a 1/16-inch aluminum shear rivet, flathead pin, washer and cotter pin, and a quick-release pin to a bellcrank mounted below the oxygen cylinder. The ejection gun trip rod crossbeam mounted on the ejection gun barrel holds a quick-release type striker pin (the same quick-release pin that secures the time release mechanism trip rod to the ejection gun trip rod crossbeam). As the seat rises during ejection, a trip lever is deflected downward when it comes in contact with the quick release sticker pin and transmits the deflection to the bellcrank, pulling on the oxygen cylinder cable, fracturing a breakoff nipple within the oxygen cylinder, and releasing the oxygen supply. (Since only a 1/4-inch pull on the cable is required to actuate the oxygen cylinder, and the cable deflection is not enough to allow the bellcrank and trip lever to clear the striker pin, the 1/16-inch aluminum rivet securing the two links shears.) This permits the trip lever and bellcrank to be deflected further downward, unrestricted by the limitations of the oxygen cylinder cable. A manually actuated knob, located on the upper right side of the seat bucket, is connected by a cable to the bellcrank. The knob provides for manual actuation of the oxygen cylinder in case of malfunction in the normal oxygen system. Pulling the manual actuating knob deflects the bellcrank downward, pulls the oxygen actuating cable, fracturing a breakoff nipple within the oxygen cylinder, and releasing the emergency oxygen supply.

a. *Removal.*

(1) Disconnect oxygen linkage from oxygen cylinder by removing quick-release pin (25, figure 1-9) that secures cable link (29) to bellcrank (24).

(2) Separate fork end of cable (9) from bellcrank (24) by removing cotter pin (27) and flathead pin (26).

(3) Separate manual actuating knob (2) from cable (9) by removing nut and washer.

(4) Remove screws and nuts securing cable clamps (8) to seat bucket. Remove cable clamps from cable conduit (7).

(5) Remove nuts securing actuating knob support bracket (3) to seat bucket and remove cable (9).

(6) Remove upper slotted nut and washer (21), using screwdriver, Part No. 105GT1044. Remove chain of quick-release pin (25) from bellcrank support bracket (22).

(7) Using screwdriver, Part No. 105GT1044, remove remaining slotted nuts securing bellcrank support bracket (22) to seat bucket and carefully slide bracket off shaft (23).

(8) Remove shaft (23) by carefully pulling out on bellcrank (24). As the shaft slides out of trip lever guard (18), the trip lever (30) will fall out.

(9) Remove spring (19) from shaft (23). Separate bellcrank (24) from shaft (23) by drifting out taper pin (20).

b. *Inspection.*

(1) Inspect threaded areas for crossed, stripped, or worn threads.

(2) Inspect all metal parts for general condition.

(3) Inspect cable for fraying, corrosion, and kinks.

c. Repair or Replacement. Replace all parts found to be defective during inspection.

d. Installation.

(1) Position bellcrank (24, figure 1-9) on shaft (23) and secure bellcrank to shaft with taper pin (20).

(2) Place spring (19) over shaft (23).

(3) Position trip lever (30) in a horizontal position in trip lever guard (18). Slide shaft (23) into trip lever guard and through trip lever so that trip lever will be in a horizontal position and rest on the flats of the shaft. The bellcrank (24) must also be in a horizontal position relative to the trip lever. (See detail A, figure 1-9.)

(4) Slide bellcrank support bracket (22) on shaft (23). Position bracket on studs and secure bellcrank to lower stud with washer and slotted nut. Use screwdriver, Part No. 105GT1044, to install slotted nut.

(5) Position chain of quick-release pin (25) on upper stud and secure chain and bracket with slotted nut and washer (21). Use screwdriver, Part No. 105GT1044, to install slotted nut.

(6) Install cable (9) and secure by positioning actuating knob support bracket (3) on seat bucket and securing with nuts.

(7) Position manual actuating knob (2) on cable (9) and secure with washer and nut.

(8) Secure cable conduit (7) to seat bucket with cable clamps (8), screws, and nuts.

(9) Secure terminal end of cable (9) to bellcrank (24) with flathead pin (26) and cotter pin (27).

(10) Secure cable link (29) to bellcrank (24) with quick-release pin (25).

e. Functional Check. Perform a functional check on the emergency oxygen system as described in paragraph 4-6x.

WARNING

The quick release type striker pin has a knurled head. The quick release pin is longer than other pins so it will strike the trip lever.

5-22. Seat Actuating Jack Mechanism.

The seat actuating jack mechanism provides for height adjustment of the seat bucket. The seat actuating jack (figure 5-14) is located in back of the seat bucket, between the vertical beams. The shaft end of the actuating jack is bolted to the 40 g crossmember and the motor end is attached to the seat bucket. A momentary three-position toggle switch, located on the right side of the seat bucket, sends 28 volts dc from the aircraft electrical system to the actuating jack motor. Depending on the position of the toggle switch, the seat bucket will raise or lower to the desired position, through a distance of 4.7 inches of travel.

a. Removal.

(1) Remove connector (8, figure 3-6) from seat raising actuator (7).

(2) Remove bolts, washers, and locknuts (1 and 6) and remove seat actuating jack from ejection seat.

(3) Remove bolt, washer, and nut securing clamp (4) to seat bucket. Remove clamp from electrical clamp (11).

(4) Remove seat height adjustment switch (2), insulating plate, and spacer plate from seat bucket by removing bolts, washers, and locknuts (3).

(5) Disconnect cable leads from seat height adjustment switch and remove electrical cable (11).

b. Disassembly.

(1) Remove nuts (1, figure 5-15) washers (2), and bolts (3) and separate assembled plate (4), gear housing (11), and motor (12) as an assembly from bearing housing.

(2) Remove bearing (5), plate (4), gear (6), bearings (7 and 8), gear (9), bearing (10), and gear housing (11) from motor (12).

(3) Remove nuts (13), washers (14), and bolts (15) and separate bearing housing (22), bearings (16 and 18), and ring gear (17) as an assembly from jack housing (25). Remove bearing (16), ring gear (17), and bearing (18) from bearing housing (22).

(4) Remove bearing (19), jackscrew (20), bearing (21), and plug assembly (26) from jack housing (25).

(5) Remove screws (23) and connector (24) from jack housing (25).

c. Cleaning. Clean all parts with drycleaning solvent (item 6, table 1-2) and dry with a clean cloth or filtered, compressed air.

d. Inspection.

(1) Inspect gears for cracks and excessive wear.

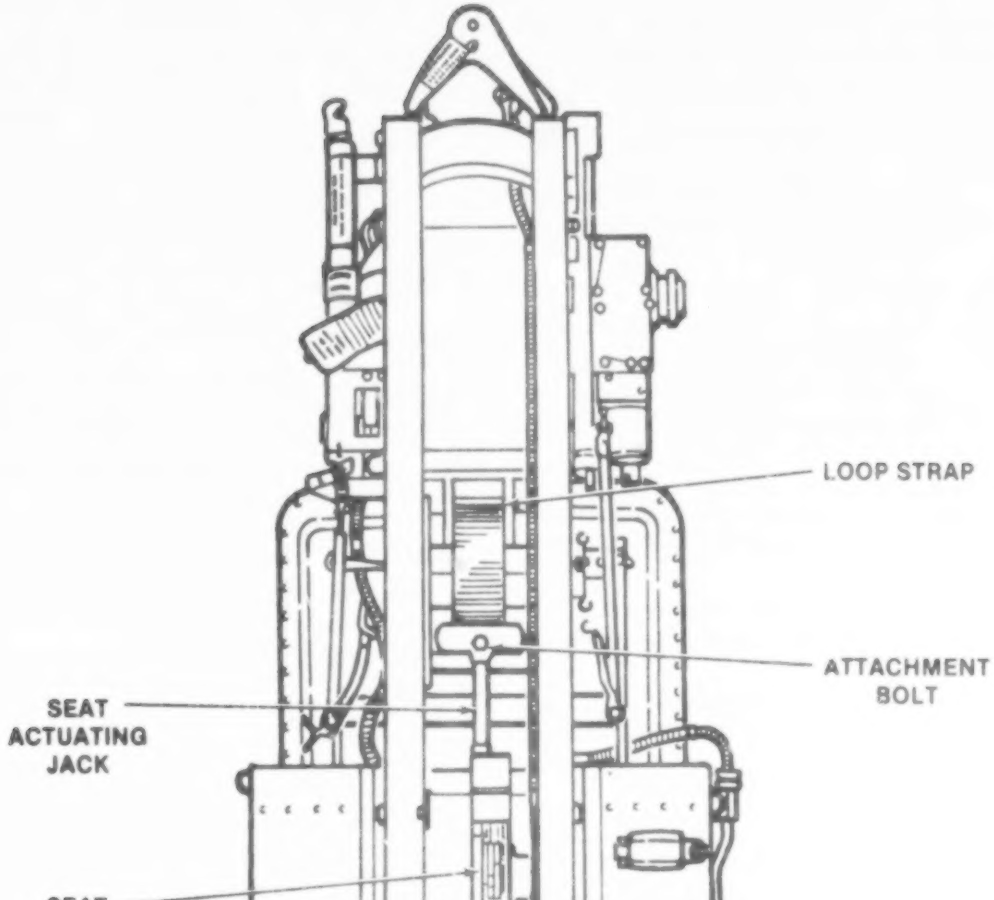


Figure 5-14. Location of seat actuating jack

(2) Inspect bearings for galling, excessive wear, and for looseness with mating parts.

(3) Inspect housings for cracks.

(4) Inspect all threaded parts for stripped threads.

e. Repair or Replacement. Repair of the seat actuating jack mechanism is limited to the replacement of defective components.

f. Reassembly.

(1) Secure connector (24, figure 5-15) to jack housing (25) with screws (23).

(2) Install plug assembly (22), bearing (19), jackscrew (20), and bearing (21) in jack housing (25).

(3) Install bearing (18), ring gear (17), and bearing (16) in bearing housing (22). Secure bearing housing to jack housing (25) with bolts (15), washers (14), and nuts (13).

(4) Install gear housing (11), bearing (10), gear (9), bearings (8 and 7), gear (6), bearing (5), and plate (4) on motor (12).

(5) Secure motor (12), gear housing (11), and plate (4) to bearing housing (22) with bolts (3), washers (2), and nuts (1).

g. Installation.

(1) Connect leads of electrical cable (11, figure 3-6) to seat height adjustment switch (2).

(2) Secure spacer plate, insulating plate, and seat height adjustment switch (2) to seat bucket with bolts, washers, and locknuts (3).

(3) Install clamp (4) on electrical cable (11) and secure clamp to seat bucket with bolt, washer, and nut.

(4) Secure seat actuating jack to ejection seat with bolts, washers, and locknuts (1 and 6).

(5) Install connector (8) to seat raising actuator (7).

h. Maintenance Operational Check.

(1) Apply 28 volts dc power (20 amperes minimum) to seat actuating jack mechanism.

CAUTION

Do not operate the seat raising actuator more than 1 minute (maximum) during any 8-minute period of time. Extended operation will shorten the seat raising actuator service life.

(2) Check that seat bucket moves up when seat height adjustment switch is pushed aft, and stops when switch is released.

(3) Check that seat jack motor stops when seat bucket reaches full up position.

(4) Check that seat bucket moves down when seat height adjustment switch is pushed forward, and stops when switch is released.

(5) Check that seat jack motor stops when seat bucket reaches full down position.

5-23. Time Release Mechanism.

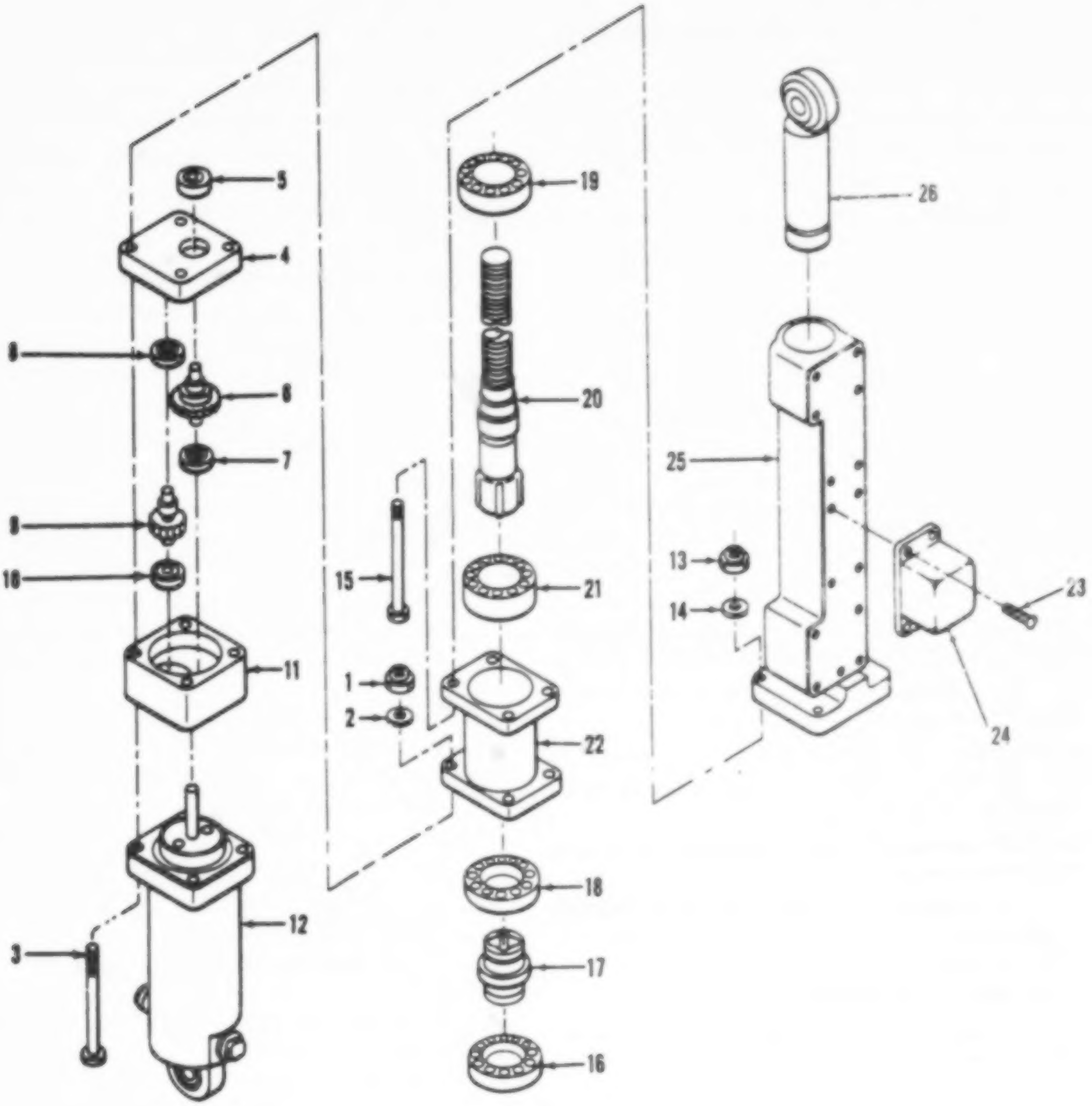
The time release mechanism, mounted on the upper portion of the right main beam, provides a means whereby the occupant will be automatically released from the ejection seat between ground level and 15,500 feet maximum. The time release mechanism is actuated by a trip rod attached to the ejection gun trip rod crossbeam by a quick-release pin which pulls the time release mechanism sear when the ejection seat is ejected. When 1.65 to 1.85 seconds have elapsed after the sear is pulled, the following items will be automatically released: harness loop strap attachment, personnel parachute restraint straps, two rigid seat survival kit restraint lugs attached to the seat bucket, leg restraint cord attachment, and the scissor-restrained drogue shackle. A barostatic control incorporated in the time release mechanism prevents the timing mechanism from operating until the ejection seat has descended to a pre set altitude of 15,500 to 14,000 feet optimum.

a. Removal.

(1) Ensure the time release mechanism is cocked.

WARNING

Keep hands clear of area below time release mechanism plungers. Plungers extend with great force.



1. NUT
2. WASHER
3. BOLT
4. PLATE
5. BEARING
6. GEAR
7. BEARING
8. BEARING
9. GEAR
10. BEARING
11. GEAR HOUSING
12. MOTOR
13. NUT
14. WASHER
15. BOLT
16. BEARING
17. RING GEAR
18. BEARING
19. BEARING
20. JACKSCREW
21. BEARING
22. BEARING HOUSING
23. SCREW
24. CONNECTOR
25. JACK HOUSING
26. PLUG ASSEMBLY

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Figure 5-15. Seat actuating jack mechanism – exploded view

(2) Disconnect bungee from time release mechanism trip rod (2, figure 4-7).

(3) Carefully support time release mechanism and remove three mounting bolts.

(4) Slide time release mechanism down while turning it outward, only as much as necessary, until upper plunger rod is clear of guard and guide tubes.

CAUTION

Use caution when removing time release mechanism to prevent bending the upper plunger rod in the scissor release plunger housing.

b. Cleaning. Clean time release mechanism using a clean cloth slightly moistened with drycleaning solvent (item 6, table 1-2). Remove all traces of drycleaning solvent using a clean, dry cloth.

c. Inspection.

(1) Inspect time release mechanism for loose or missing hardware.

(2) Inspect time release mechanism for cracks and corrosion.

(3) Ensure cotter pin properly retains coverplate on side of time release mechanism.

(4) Ensure serrated capsule housing cap is properly secured with lockwire.

d. Test.

(1) Perform a time delay operational check in accordance with paragraph 4-6*l*(1).

(2) Test time release mechanism in accordance with paragraph 4-6*l*(2).

(3) Perform a standard barostat operational check in accordance with paragraphs 4-6*l*(3) or 4-6*l*(4), as applicable.

e. Barostat Replacement.

(1) Cut lockwire securing barostat to time release housing.

CAUTION

Do not allow foreign materials to contaminate internal time release mechanism gears. Do not add lubricant to internal mechanisms.

(2) Remove barostat assembly.

(3) Install new barostat assembly handtight.

(4) Perform barostat operational check in accordance with paragraphs 4-6*l*(3) or 4-6*l*(4), as applicable.

(5) Lockwire serviceable barostat.

f. Installation. (See figure 4-35.)

(1) Ensure serviceable time release mechanism is being installed on ejection seat.

NOTE

Do not install if overage (refer to para 4-8).

(2) If a replacement time release mechanism is to be installed, check that lockwire on barostat assembly is in proper condition before installation.

(3) Ensure time release mechanism is cocked.

(4) Remove slack from harness release plunger rod by carefully depressing rod until it bottoms out.

(5) Insert harness release plunger rod into guard and guide tube on ejection seat. Slide time release mechanism upward, being careful not to bend the harness release plunger rod.

WARNING

Keep hands clear of area below time release mechanism plungers. Plungers extend with great force.

(6) Carefully support time release mechanism and install three mounting bolts.

(7) Connect bungee to time release mechanism trip rod (2, figure 4-7).

g. Maintenance Operational Check.

(1) Cock time release mechanism in accordance with paragraph 4-6*ad*(10).

(2) Functionally check time release mechanism in accordance with paragraph 4-6*ad*.

h. Standard Barostat Adjustment.

(1) The following applies when using the Vacuum Test Box (TDO 1153).

(a) Remove barostat cap from barostat assembly.

NOTE

The lock wire securing the barostat to the time release mechanism body should not be removed.

(b) Loosen nut which secures the clamp to the capsule stack adjustment screw.

NOTE

Loosen the nut sufficiently to enable the capsule stack to be turned with a well fitting screwdriver. If too loose, large test variations will occur as a result of subsequent lock nut tightening after altitude adjustment.

(c) With lock nut loosened, insert time release mechanism into vacuum test box with barostat cap removed.

CAUTION

Exercise care whenever the barostat cap is removed to preclude liquid contamination of exposed surfaces.

(d) Evacuate the vacuum chamber to the prescribed altitude. Refer to paragraph 4-6*l*(4).

NOTE

If a new barostat is being adjusted, accomplish three altitude checks to establish initial setting before attempting adjustment.

(e) While viewing through the chamber lid, carefully insert adjustment screwdriver into the slot in the barostat adjustment screw.

(f) If initial test altitude readings were too high (15,000 to 15,500 feet) turn the adjustment knob clockwise to DECREASE altitude release point; turn counter clockwise to retract or INCREASE altitude release point.

NOTE

A one-eighth turn of the adjustment screw will alter release altitude approximately 700 feet.

(g) Accomplish altitude tests and continue adjustment as necessary until desired release altitude is attained.

NOTE

Tightening the barostat adjustment screw clamping nut after testing will decrease the altitude approximately 500 feet. Therefore this after-test change should be considered when adjustments are being made.

(h) Repeat altitude test two additional times to confirm release altitude.

(i) Remove time release mechanism from vacuum chamber and tighten adjustment screw lock nut and install cap finger tight.

(j) Repeat altitude test three additional times after tightening lock nut to confirm final adjustment.

(k) Remove time release mechanism from vacuum chamber, tighten barostat cap and safety wire.

(2) The following applies when using the barostat adapter assembly (105GT1030) with external vacuum motor.

CAUTION

Do not remove lock wire securing barostat to time release mechanism body until after barostat cap has been loosened.

(a) Remove lock wire from barostat cap and loosen cap. Remove lock wire securing barostat to time release mechanism body.

NOTE

Safety wire must be removed from barostat and time release mechanism body to assure good fit of vacuum test cup to body face.

(b) Remove barostat cap and loosen nut which secures clamp to the capsule stack adjustment screw.

NOTE

Loosen the nut sufficiently to enable the capsule stack to be turned with a well fitting screwdriver. If too loose, large variations will occur as a result of subsequent lock nut tightening after altitude adjustment.

NOTE

If a new barostat is being adjusted, accomplish three altitude checks to establish initial setting before attempting adjustment.

(c) If initial test altitude readings were too high (15,000 to 15,500 feet), insert well-fitting screwdriver into adjusting screw slot and turn clockwise to DECREASE altitude release point; turn counter clockwise to retract or INCREASE altitude release point.

NOTE

A one-eighth turn of the adjustment screw will alter release altitude approximately 700 feet.

(d) Install barostat adapter cup over barostat and begin vacuum testing. Refer to paragraph 4-61(3).

CAUTION

Exercise care whenever the barostat cap is removed to preclude liquid contamination of exposed surfaces.

(e) Accomplish altitude tests and continue adjustment as necessary until desired release altitude is attained.

NOTE

Tightening the barostat adjustment screw clamp nut after testing will decrease the altitude approximately 500 feet. Therefore this after-test change should be considered when adjustments are being made.

(f) Repeat altitude test two additional times to confirm release altitude.

(g) Remove barostat adapter cup, tighten adjustment screw clamp nut and install barostat cap finger tight.

(h) Repeat altitude test three additional times after tightening lock nut to confirm the final adjustment.

(i) Lock wire barostat cap and barostat.

5-24. Guillotine System.

The guillotine system provides a method of cutting the withdrawal line and separating the personnel parachute from the drogue system. Operation of the manual override handle causes a cartridge to be fired. Gas pressure produced by the exploding cartridge actuates the guillotine blade which severs the withdrawal line. The guillotine system consists of the following components interconnecting linkage and operating levers to the manual override system, breech assembly, flex lines and piping, and the guillotine blade assembly.

WARNING

Before attempting to disarm the guillotine breech assembly, install ground safety lock streamer assembly, Part No. 134SEME10053, into firing pin sear. With safety pin installed in firing pin sear of the guillotine firing mechanism, push the sear upward as far as possible and remove manual override link rod. Remove lockwire from breech assembly and tab washer on seat bucket. Carefully unscrew the breech housing. Use extreme caution when removing and handling cartridge. since cartridge has a percussion-type pressure cap. Remove guillotine cartridge from breech assembly.

NOTE

For handling of cartridge, refer to TM 9-1300-206.

a. Removal.

(1) Remove thigh supports from leading edge of ejection seat. (Refer to paragraph 5-30*a*).

(2) Disconnect link assembly (19, figure 5-16) from manual override handle (17) by removing cotter pin (16) and flathead pin (18).

(3) Disconnect lower pipe assembly (6) from initiator housing (20) at nut fitting (22).

(4) Remove nuts (24), washers (23), and bolts (21) securing initiator housing (20) and remove initiator housing.

(5) Remove nuts (25), washers (26), and bolts (28) from clamps (27) securing lower pipe assembly (6). Remove clamps.

(6) Remove nuts (5) and washers (4) from plate (3) over lower pipe assembly (6) and remove plate.

(7) Disconnect lower pipe assembly (6) from hose assembly (1) at nut fitting (2) and remove lower pipe assembly (6).

(8) Disconnect hose assembly (1) from guillotine assembly (10) at nut fitting (11).

MAPS

TRANSPOSED TO

END OF VOLUME

(2) Replace any worn, distorted, or mutilated operating levers and interconnecting linkage.

(3) Replace any component found defective during inspection.

e. Lubrication.

(1) Apply lubricating grease (item 5, table 1-2) to all working parts of the guillotine system during assembly.

(2) Apply a light coat of lubricating oil (item 2, table 1-2) to interconnecting linkage and operating levers.

f. Installation.

WARNING

Use extreme caution when handling and installing guillotine cartridge into breech housing, as cartridge has a percussion-type pressure cap. Ensure that firing pin does not protrude above bottom surface of firing body hole. A physical check is required.

Install ground safety lock streamer assembly, Part No. 134SEME10053, into firing pin sear. With safety pin installed in firing pin sear of the guillotine firing mechanism, push the sear upward as far as possible and install manual override link rod.

Carefully screw in the breech assembly. Safety-wire breech assembly to tab washer on seat bucket.

NOTE

Check spring balance on safety guard. A disturbing load of 6 to 8 pounds must be obtained.

(1) Install and secure guillotine assembly (10, figure 5-16) with bolts (7), washers (8), and nuts (9).

(2) Install initiator housing (20) and secure with bolts (21), washers (23), and nuts (24).

(3) Swing link assembly (19) up to manual override handle (17) and secure to handle with flathead pin (18) and cotter pin (16).

(4) Install and connect lower pipe assembly (6) to intiator housing (20) at nut fitting (22) and tighten nut fitting on lower pipe assembly to torque of 400 inch-pounds.

(5) Secure lower pipe assembly (6) with clamps (27), bolts (28), washers (26), and nuts (25).

(6) Install and connect hose assembly (1) to guillotine assembly (10) at nut fitting (11). Torque to 280 to 300 inch pounds.

(7) Connect lower pipe assembly (6) to hose assembly (1) at nut fitting (2). Torque to 280 to 300 inch pounds.

(8) Install plate (3) on studs and over lower pipe assembly (6) and secure with washers (4) and nuts (5). Tighten hand tight.

(9) Secure hose assembly (1) with clamps (12), bolts (13), washers (14), and nuts (15).

(10) Install thigh supports on leading edge of ejection seat. (Refer to paragraph 5-30c.)

5-25. Tip-Off Compensating Rocket (TCR) Motor (M119) and Mounting Brackets.

A M119 attached to the bottom of the ejection seat is fired immediately after ejection. The thrust of the rocket positions the seat in the correct attitude for safe firing of the drogue chute. The TCR initiator is attached to a cable approximately 64 inches long. One end of the cable is attached to the stationary catapult crossbeam causing the cable dispenser to feed out the cable as the seat rises. When the cable has been completely fed out, the initiator is triggered and ignites the M119.

a. Removal.

WARNING

Ensure rocket safety lock streamer 134SEME10054 is installed before removing rocket motor.

(1) Disconnect connector (27, figure 5-17) at top of TCR motor (25) by turning counterclockwise.

(2) Remove screws (10) securing bumper (19).

(3) Remove nut (20), lockwasher (21) and bolt (23) securing clamp (24) with initiator cable (22) to bumper (19).

(4) Remove bolts (16) and lockwashers (17) and remove front support strap (18).

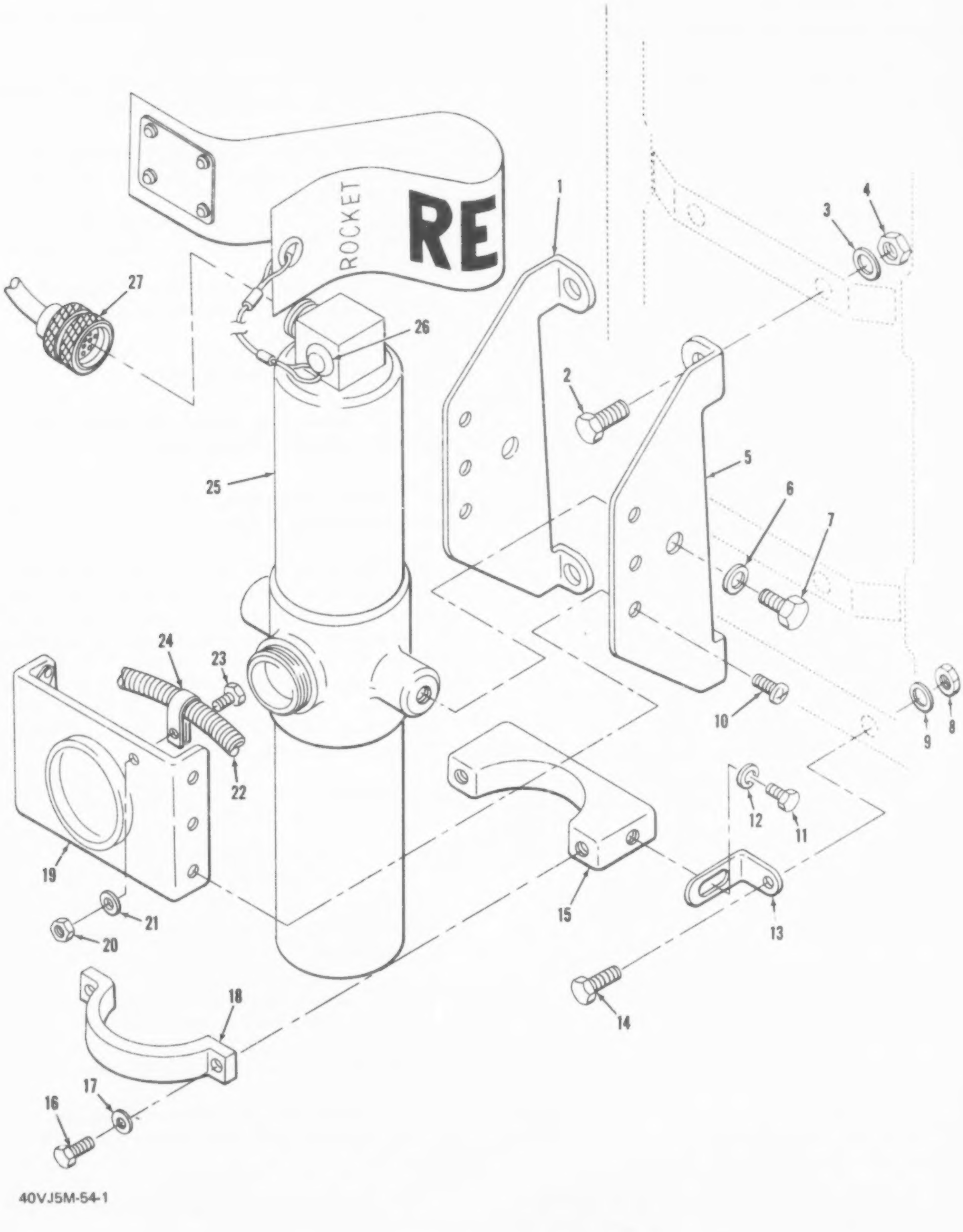

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Figure 5-17. TCR motor and mounting brackets (Sheet 1 of 2)

KEY to Figure 5-17.

1. Right mounting bracket
2. Bolt
3. Lockwasher
4. Nut
5. Left mounting bracket
6. Lockwasher
7. Bolt
8. Nut
9. Lockwasher
10. Screw
11. Bolt
12. Lockwasher
13. Front support angle bracket
14. Bolt
15. Front support block
16. Bolt
17. Lockwasher
18. Front support strap
19. Bumper
20. Nut
21. Lockwasher
22. Initiator cable
23. Bolt
24. Clamp
25. TCR motor (M119)
26. Rocket safety lock streamer locking pin
27. Connector

Figure 5-17. TCR motor and mounting brackets (Sheet 2 of 2)

(5) Support TCR motor (25) and remove bolts (7) and lockwashers (6). Remove TCR motor.

(6) Remove bolts (11) and lockwashers (12) and remove front support block (15).

(7) Remove nuts (8), lockwashers (9) and bolts (14) and remove front support angle brackets (13).

(8) Remove nuts (4), lockwashers (3) and bolts (2) and remove left and right mounting brackets (5 and 1).

b. Repair or Replacement. Repair of the tip-off compensating rocket motor and mounting brackets is limited to replacing defective components.

c. Installation.

(1) Position right and left mounting bracket (1 and 5, figure 5-17) in place, align holes and secure with bolts (2), lockwashers (3), and nuts (4).

(2) Align front support angle brackets (13) and secure with bolts (14), lockwashers (9), and nuts (8).

(3) Install front support block (15) between front support angle brackets (13) and secure with bolts (11) and lockwashers (12).

WARNING

Ensure rocket safety lock streamer locking pin is installed before installing TCR motor.

(4) Position TCR motor (25) against front support block (15) and align with holes in right and left mounting brackets (1 and 5).

WARNING

Rocket motor assemblies out of their respective container dropped more than 4 feet will be considered unserviceable.

(5) Install bolts (7) and lockwashers (6) through brackets (1 and 5) and secure rocket motor (25). Tighten to a torque of 95 – 110 inch-pounds.

(6) Install front support strap (18) on rocket motor (25) and against front support block (15), align holes and secure with bolts (16) and lockwashers (17).

NOTE

If necessary, adjust front support block (15) by loosening bolts (11). Secure after positioning.

(7) Secure initiator cable (22) with clamp (24) on bumper (19) with bolt (23), lockwashers (21), and nut (20).

(8) Place bumper (19) over rocket motor (25) and inside right and left mounting brackets (1 and 5); align holes and secure with screws (10).

WARNING

Prior to connecting the initiator cable connector, assure that a 7 to 7.5 inch diameter loop is formed by the initiator cable and that initiator cable is not loosely routed along the main beams.

(9) Connect initiator cable connector (27) to TCR motor (25) by turning clockwise.

CAUTION

Ensure cable ball-end makes positive contact with the rocket initiator ball socket.

5-26. Tip-Off Compensating Rocket Cable Dispenser.

WARNING

Install safety lock streamer 134SEME10054 into TCR initiator before attempting any replacement actions of TCR cable dispenser.

The TCR cable dispenser, mounted on the ejection seat, feeds out a cable connected to the drogue gun trip rod. Another mechanical cable (initiator cable) is connected from the dispenser to the TCR motor. When the seat rises, the drogue gun trip rod causes the TCR cable to be completely fed out (approximately 64 inches). The TCR cable pulls the initiator cable assembly, which is connected to the TCR motor initiator. When the initiator is triggered (pulled), the TCR is ignited.

a. Removal.

(1) Disconnect initiator cable assembly (3, figure 5-18) from TCR cable dispenser (2) by turning counterclockwise.

(2) Remove TCR cable (6) from drogue gun trip rod (8) by removing cotter pin (7) and flathead pin (5).

(3) Remove clamp (10) from cable assembly (3) by removing nut (9) and screw (14).

(4) Support TCR cable dispenser (2), remove nut (4) and screw (1) and remove dispenser.

b. Repair or Replacement. Repair of the tip-off compensating rocket cable dispenser is limited to replacing defective components.

c. Installation.

(1) Position TCR cable dispenser (2, figure 5-18) on seat; align holes and secure with screw (1) and nut (4).

(2) Place clamp (10) on initiator cable assembly (3) and secure clamp (10) and TCR cable dispenser with screw (14) and nut (9).

(3) Connect TCR cable (6) to drogue gun trip rod (8) with flathead pin (5) and cotter pin (7).

WARNING

Assure a 3 to 4 inch diameter arc is formed by the initiator cable assembly between the dispenser and clamp (10).

(4) Connect initiator cable assembly (3) to TCR cable dispenser (2) by turning clockwise.

(5) Lockwire initiator cable receptacle to TCR cable dispenser housing.

5-27. Tip-Off Compensating Rocket Initiator Cable.

The TCR initiator cable is connected to the TCR cable dispenser by a ball socket and receptacle dispenser and to the M119 rocket initiator by means of a ball socket and receptacle dispenser. The pull force of the dispenser cable is transmitted by the initiator cable to the TCR initiator. After approximately one-half inch of pull travel, the initiator cable mechanically disconnects from the receptacle dispenser cable at the dispenser housing.

WARNING

Install safety lock streamer pin 134SEME10054 into initiator before attempting any work on the initiator cable assembly. Accidental triggering of initiator will ignite the M119 rocket.

a. Removal.

(1) Disconnect initiator cable assembly (3, figure 5-18) from the cable dispenser by turning connector counterclockwise and removing cable.

(2) Remove clamps (10 and 12) from cable housing by removing nuts (9 and 13) and screws (11 and 14).

(3) Disconnect initiator cable from rocket initiator by turning connector counterclockwise and removing cable.

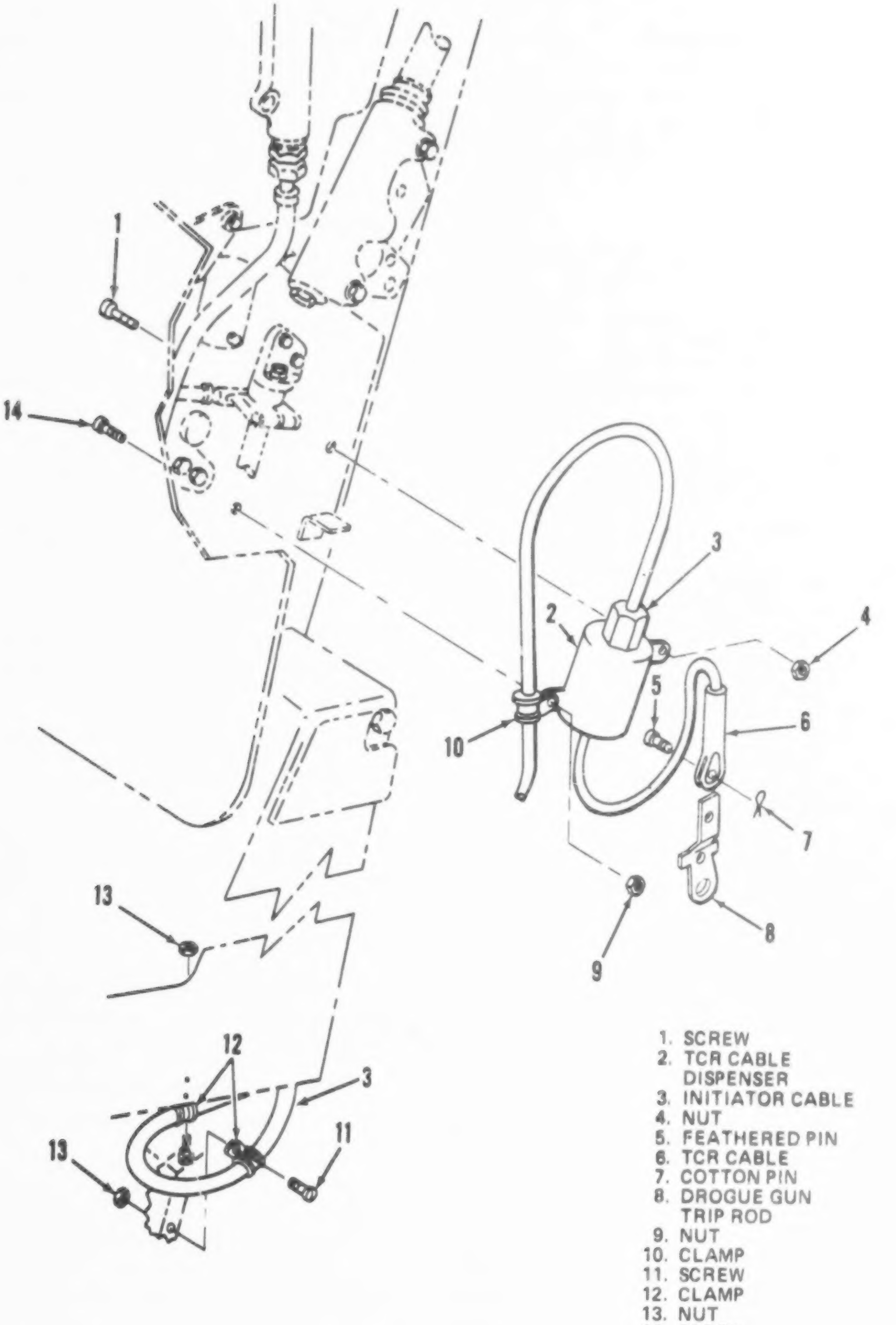
b. Repair or Replacement. Repair of TCR initiator cable is limited to replacement of the cable assembly.

c. Installation.

(1) Position initiator cable ball end into the dispenser disconnect ball socket and tighten receptacle dispenser by turning clockwise.

(2) Form a 3 to 4 inch diameter arc with cable and install clamp (10).

(3) Install clamp (12) on initiator cable, assuring the cable assembly is snugly routed along the main beam to the seat bucket.



1. SCREW
2. TCR CABLE DISPENSER
3. INITIATOR CABLE
4. NUT
5. FEATHERED PIN
6. TCR CABLE
7. COTTON PIN
8. DROGUE GUN TRIP ROD
9. NUT
10. CLAMP
11. SCREW
12. CLAMP
13. NUT
14. SCREW

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Figure 5-18. TCR cable dispenser removal

WARNING

Provide a 7 to 7.5 inch diameter loop in the initiator cable assembly between the seat bucket clamp and TCR initiator to assure positive pull force transmission to the rocket initiator.

(4) Form a generous loop with excess cable and position ball end into the initiator ball socket. Tighten connector by rotating clockwise.

CAUTION

Ensure cable ball end makes positive contact with the ball socket.

(5) Safety the connector to the initiator housing and safety the upper connector to the dispenser housing.

5-28. Sticker Clips.

Sticker clips are riveted to the outside of the seat bucket side skin and provide attachment for the rigid seat retention assembly sticker straps. The sticker clips maintain a 20 to 50 pound spring pressure on the sticker straps to provide temporary restraint for the occupant in the ejection seat after the harness and rigid seat retention assembly are unlocked during ejection.

a. Removal. Drill out four rivets securing sticker clip to seat bucket and remove sticker clip.

b. Installation. Position sticker clip to outside surface of seat bucket side skin and secure with four rivets.

c. Maintenance Operational Check.

(1) Ensure sticker strap lugs are in their respective spring clips on each side of seat bucket assembly.

(2) Check each spring clip for extraction tension by attaching a spring scale to strap end of sticker strap lugs and pulling on spring scale until each lug releases from its spring clip. (See figure 4-17.)

NOTE

Release tension must be 35 ±15 pounds.

5-29. Ejection Seat Slippers.

The inboard side of each main beam is fitted with three rectangular slippers (5, 10, and 12, figure 1-3). The slippers are bolted through the beams and are aligned vertically so that they slide within the ejection gun guide rails to provide the ejection seat with a firm ejectable support without excessive lateral movement. On ejection, the slippers maintain vertical alignment of the ejection seat to the ejection gun until the ejection seat and occupant have cleared the aircraft.

a. Removal. Remove top slippers (5), middle slippers (12), and bottom slippers (10) from left and right main beams (7 and 11) by removing nuts and washers.

b. Repair. Repair of the slippers consists of removal of metal burrs from upper and lower slippers by filing and smoothing. Metal burrs on upper and lower slippers may be removed provided edge radius is not altered. Metal burrs or gouges in the middle slipper edges is cause for replacement.

CAUTION

If any doubt exists concerning extent of damage on any slipper, the slipper shall be replaced with a new item.

c. Installation.

(1) Secure top slippers (5 figure 1-3), middle slippers (12), and bottom slippers (10) to right and left main beams (7 and 11) with washers and nuts.

(2) Tighten slipper nuts to a torque of 50 to 60 inch-pounds.

5-30. Thigh Supports.

The thigh supports are located on the leading edge of the seat pan.

a. Removal.

(1) Remove thigh support pads by opening zippers on both pads, connecting pads to seat cushion, and pulling pads off thigh supports.

(2) Remove screws (figure 5-19) securing thigh supports to thigh support brackets and remove thigh supports.

b. Cleaning.

(1) Spot-clean thigh supports using a solution of 1 to 4 ounces of detergent (hand dishwashing compound) to 1 gallon of water and apply sparingly.

(2) Rinse cleaned area with clear water.

c. Repair or Replacement. Replacement is required if thigh supports are found defective during inspection.

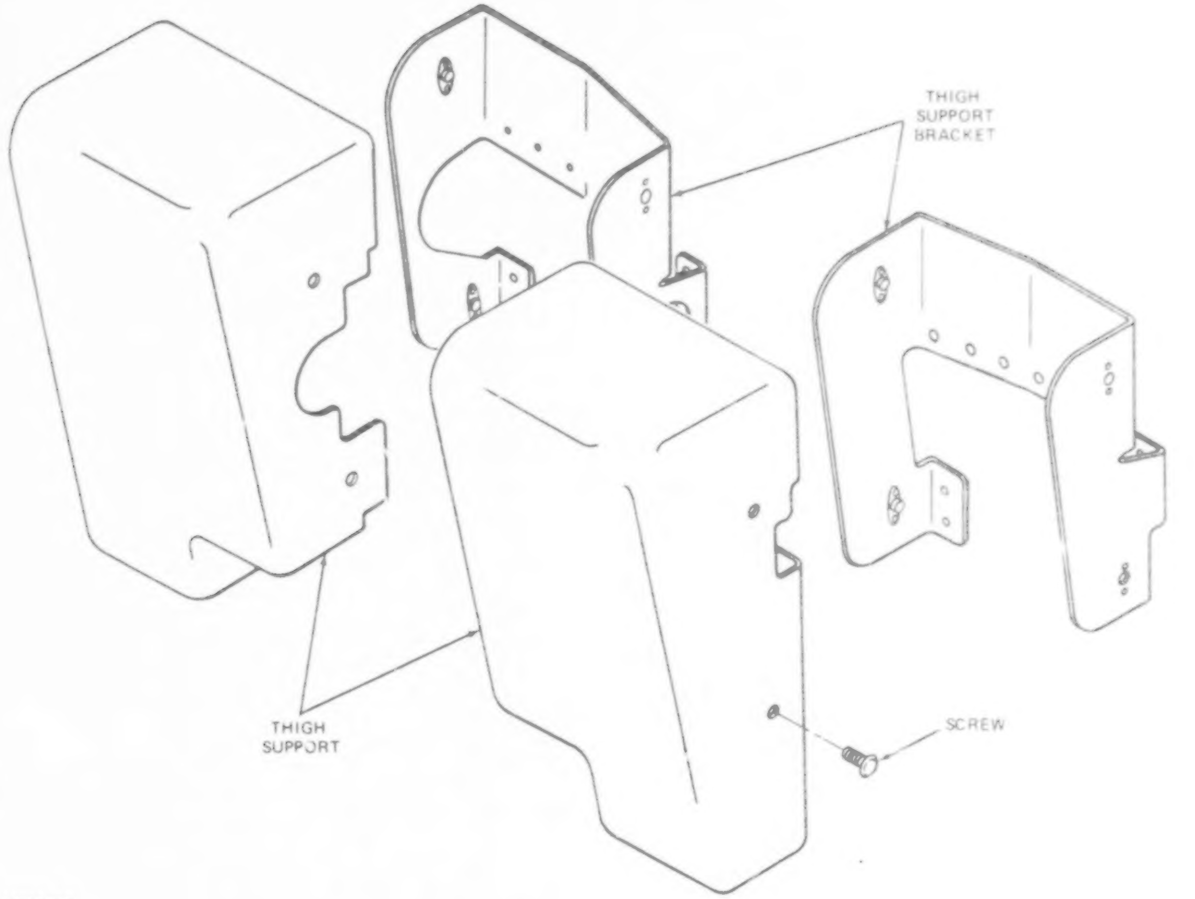

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Figure 5-19. Thigh support removal

d. Installation.

(1) Align thigh supports (figure 5-19) on thigh support brackets and secure with screws.

(2) Replace thigh support pads by zippering both pads to seat cushion and pressing pads firmly to thigh supports velcro strips.

5-31. Backplate Roller.

The backplate roller is located between two brackets on the front of the seat behind the back cushion.

a. Removal.

(1) Remove nut (4, figure 5-20) from screw (1) in right and left brackets (2 and 3).

(2) Hold roller (5) and slip screw (1) out of right and left brackets (2 and 3). Remove roller (5) and screw (1).

b. Repair or Replacement. Replace roller if found defective during inspection.

c. Installation.

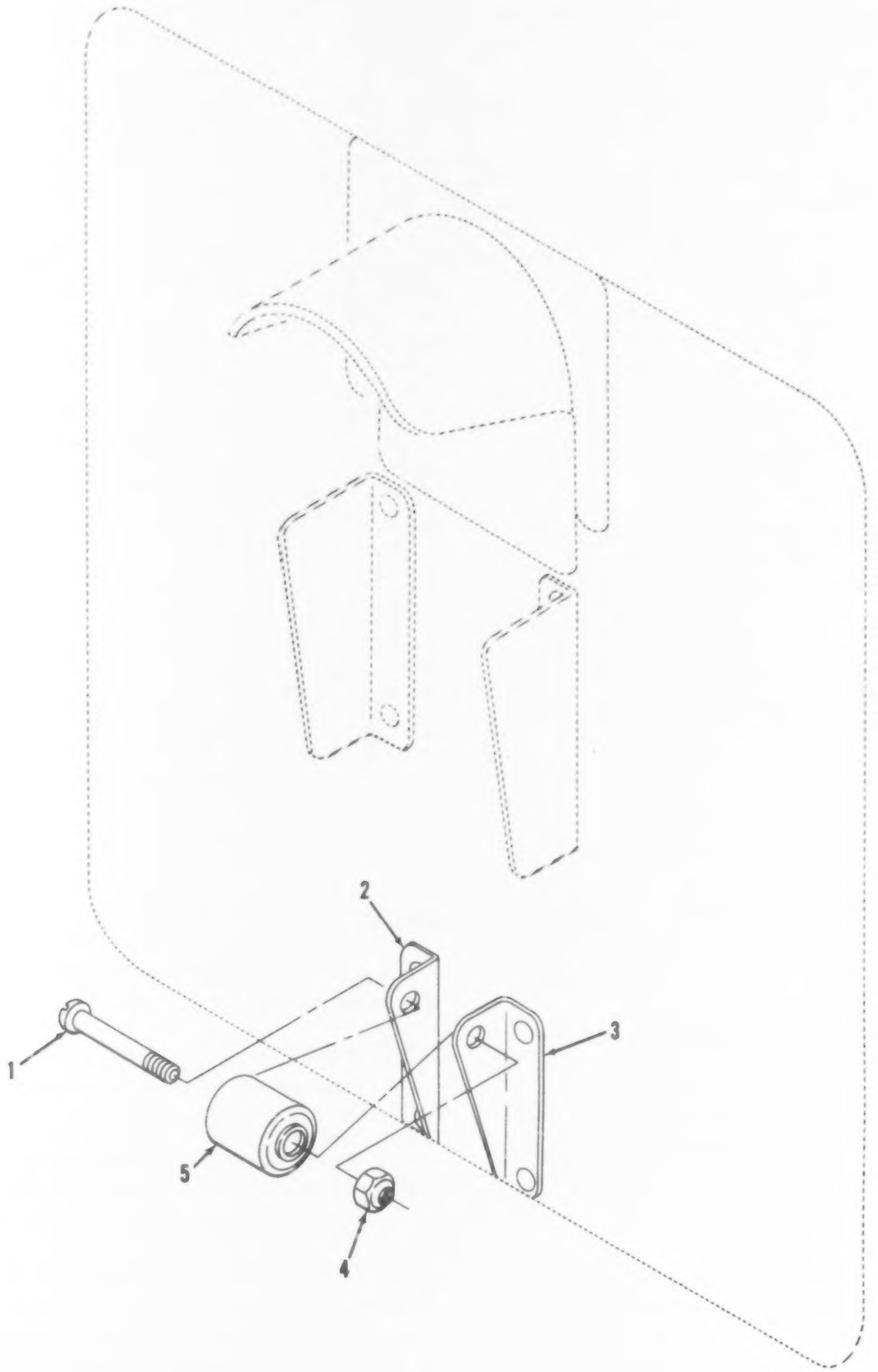
(1) Place roller (5, figure 5-20) between right and left brackets (2 and 3) and align holes.

(2) Install screw (1) through right and left brackets (2 and 3) and roller (5) and secure with nut (4).

(3) Ensure roller (5) rotates freely after installation.

5-32. Ejection Seat and Ejection Gun Identification Number.

The ejection seat and ejection gun identification number is stenciled on their respective components to facilitate accident investigation, ground handling, and maintenance. The identification number consists of the symbol A/C followed by the aircraft serial number (less fiscal designation) followed by a hyphen and the letter P (pilot seat) or CP (copilot or observer seat) in 1/2-inch high white letters. Application should be accomplished in accordance with figure 5-21.



1. SCREW	3. LEFT BRACKET	5. ROLLER
2. RIGHT BRACKET	4. NUT	

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Figure 5-20. Backplate roller

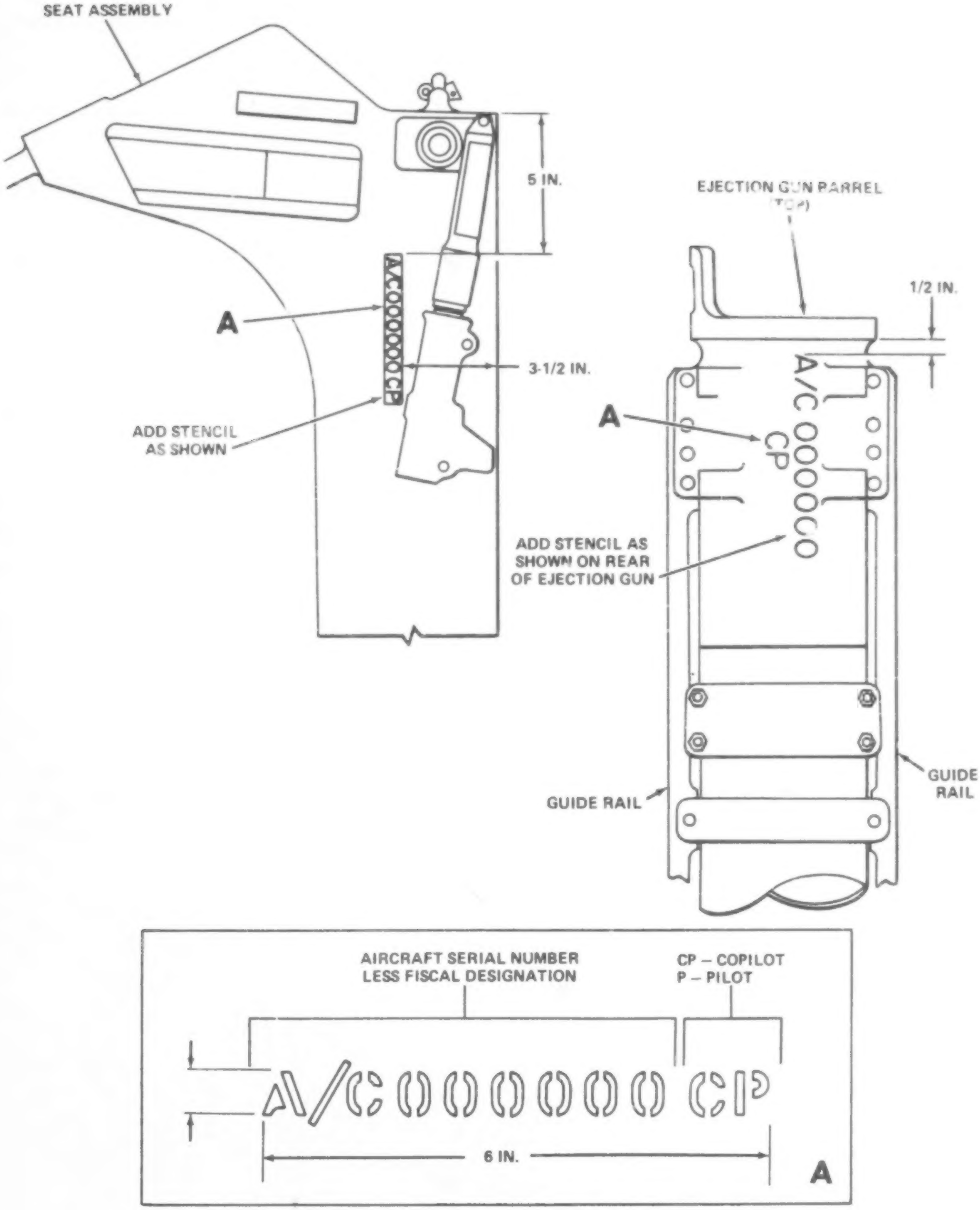

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Figure 5-21. Ejection seat and ejection gun identification number location

Section II. PREPARATION FOR STORAGE AND RESHIPMENT

5-33. Uncrating, Unpacking, Storage, and Reshipment Instructions.

The following instructions are for complete uncrating, unpacking, storage, and reshipment of the MK-J5D Ejection Seat.

CAUTION

Observe handling instructions printed on outside of shipping container.

a. Uncrating. (See Figure 5-22.) To uncrate the MK-J5D Ejection Seat, proceed as follows:

(1) Place shipping container in horizontal position, facing up.

(2) Remove packing straps.

(3) Remove red circled screws and corner gussets in top of shipping container and remove cover.

(4) Remove two nuts and two washers from bolts securing upper seat brace to shipping container.

(5) Withdraw two bolts and remove upper seat brace from shipping container.

(6) Remove four screws from each block securing lower seat brace.

(7) Remove blocks and withdraw lower seat brace from shipping container.

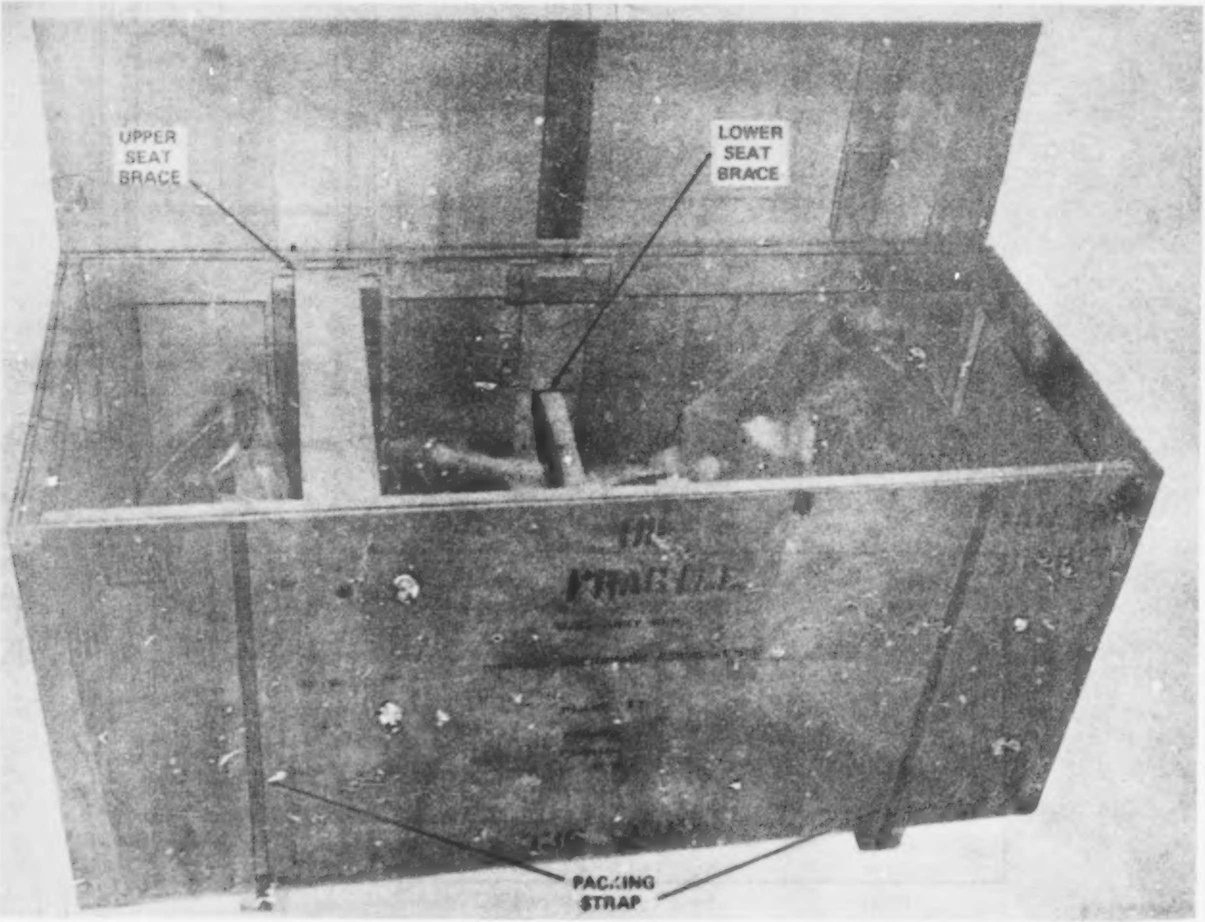

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Figure 5-22. Ejection seat in shipping container

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(8) Remove two nuts and two washers and withdraw two bolts securing wedge at top of ejection seat. Remove wedge. (See figure 5-23.)

WARNING

Exercise care when lifting seat from shipping container. Shipping weight of seat is approximately 125 pounds.

(9) Remove ejection seat from shipping container, lifting top of seat first, and place seat on secure flat surface.

b. Unpacking. (See Figure 5-24.) To unpack the MK-J5D Ejection Seat, proceed as follows:

(1) Open plastic bag at top of seat only and remove seat from plastic bag.

(2) Remove items included with seat shipment. (Refer to table 5-2.)

NOTE

Retain plastic bag and two sacks of desiccant from ejection seat bucket, for use in repacking.

(3) Remove remainder of wrappings from seat.

(4) Slide seat cradle mounting rail into position on seat back and secure upper and lower quick release pins.

(5) Mount ejection seat on seat cradle. (See figure 5-25.)

c. Storage. The methods and materials used in the preparation of the MK-J5D Ejection Seat for storage are identical with the methods and materials used in preparing the ejection seat for reshipment.

d. Reshipment. The following instructions for preparation of the MK-J5D Ejection Seat for reshipment are applicable to the Organizational level of maintenance.

(1) Place shipping pallet (figure 5-26) on level area and locate ejection seat on top of shipping pallet.

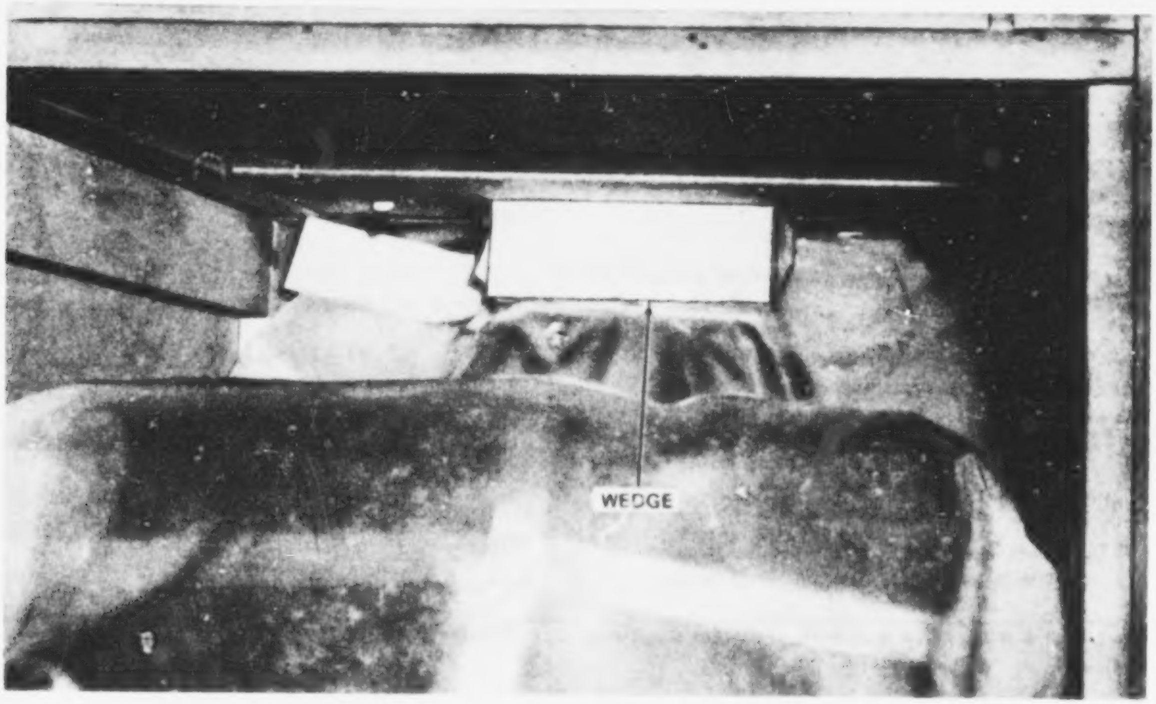

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Figure 5-23. Wedge at head of seat (in position)

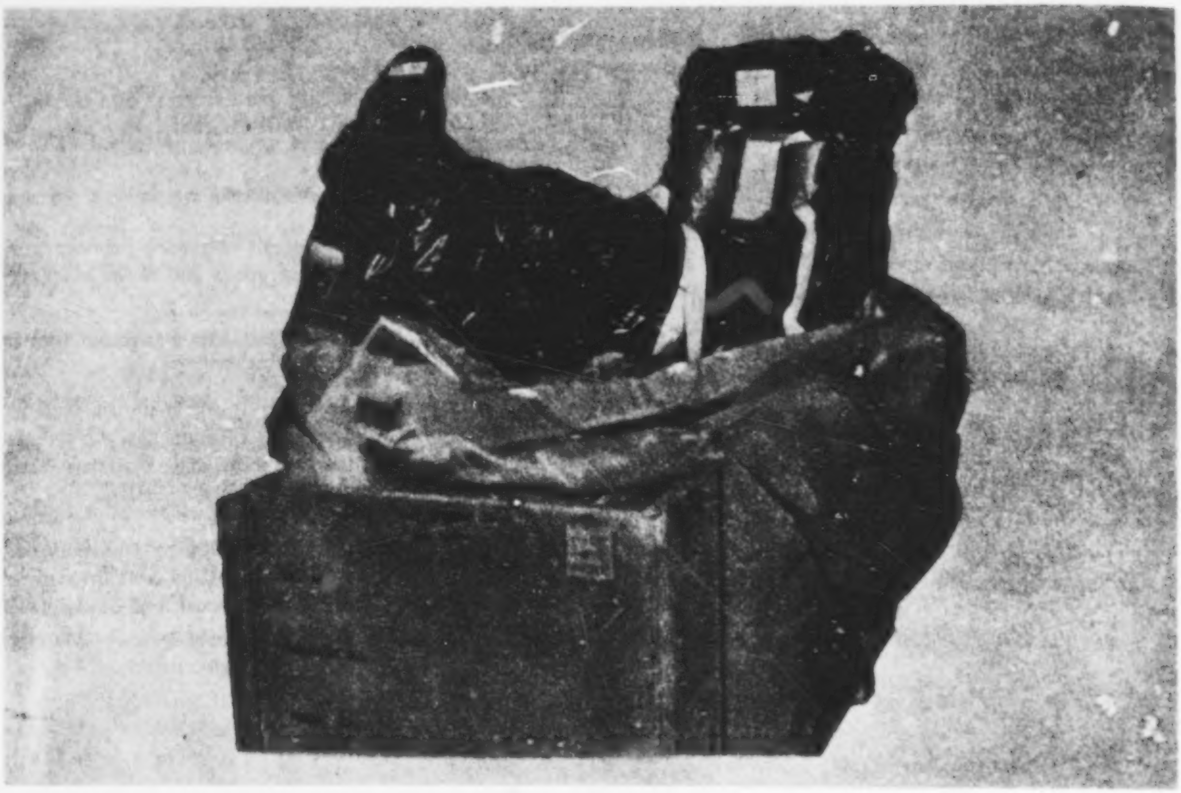

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Figure 5-24. Ejection seat with outer wrapping removed

(2) Install items listed in table 4-3 and two sacks of desiccant in seat bucket. (Sacks of desiccant were retained when seat was unpacked).

(3) Wrap seat securely in sheet of plastic. (See figure 5-24.)

(4) Insert seat in plastic bag. (Plastic bag which was retained when seat was unpacked.)

WARNING

Exercise care when lifting seat. Shipping weight of seat is approximately 125 pounds.

(5) Insert ejection seat, bottom first, into shipping container.

(6) Install wedge at top of ejection seat (figure 5-23). Install two bolts, two washers and nuts to secure wedge.

(7) Install lower seat brace (figure 5-22) and secure each seat brace block with four screws.

(8) Install upper seat brace (figure 5-22) and secure with bolts, washers, and nuts.

(9) Install shipping container cover and secure with screws in red circles on cover.

(10) Install packing straps.

5-34. Repair Parts and Special Tools.

Refer to TM 55-1510-204-23P, Appendix A.

Table 5-2. Items Included With Seat Shipment

Nomenclature	Part No.	Quantity
Handwheel	MBEU/26528	1
Retaining collar	MBEU/16711	1
Leg garter	MBEU/8507	1
Leg garter	MBEU/30-J5	1
Top latch plunger	MBEU/26609	1
Top latch plunger spring	MBEU/6617	1
Drogue shackle	MBEU/5940	1
Shackle bolt	MBEU/12064	1
Shackle nut	A.126-G	1
Floor bracket	MBEU/3666	2
Quick-release pin	MBEU/1434	2
Quick-release pin	MBEU/3325	1
Quick-release pin	MBEU/3921	1
Operating rod	MBEU/400-24	1
Pin	SP4Y.A2	2
Bushing for manual override handle	MBEU/1081GRU5	
Link	MP-400-54	1
Pin	SP4Y-A3	1
Split pin	SP9-C4	3
Double cleat	MBEU/186J5	1
Mushhead bolt	A.133 1/2C	1
Stiffnut	A.126-C	1
Washer	SP.122-C	1

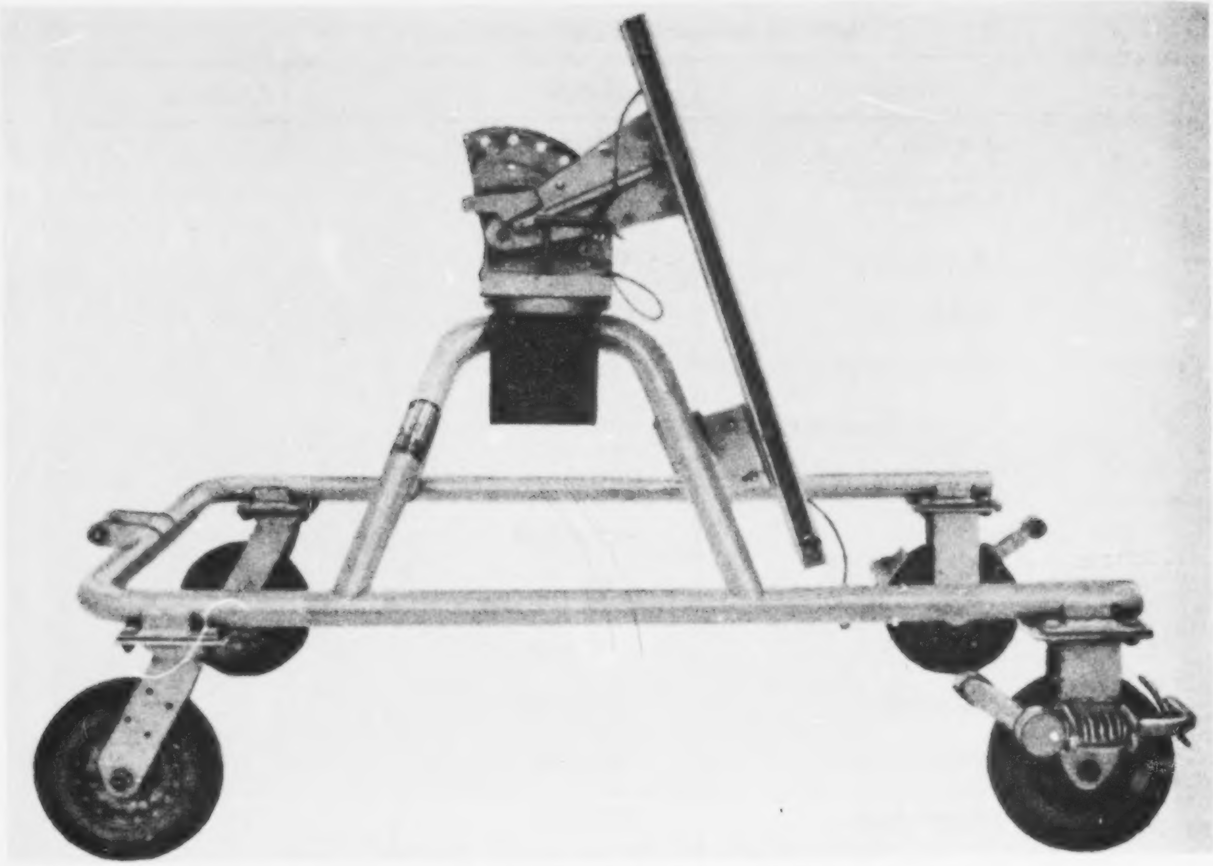

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Figure 5-25. Ejection seat cradle part no. 105GT1040

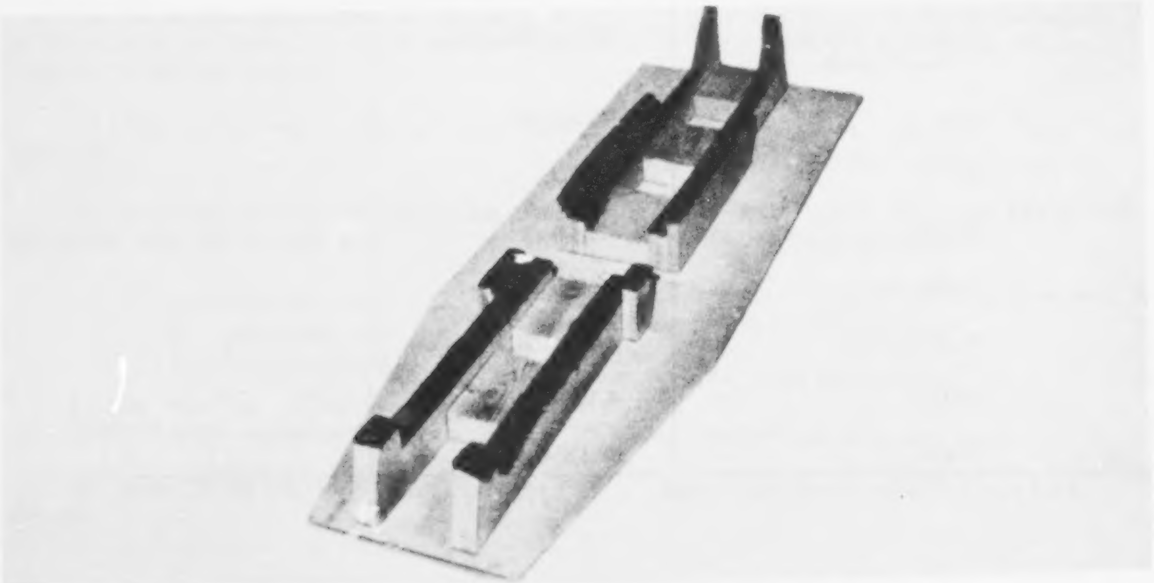

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Figure 5-26. Shipping Pallet for MK-J5D ejection seat

CHAPTER 6

DIFFERENCE DATA SHEETS

(Not Applicable)

Since only one model of the ejection seat is to be covered in this manual, Difference Data Sheets are not applicable.

APPENDIX A

REFERENCES

NO.	TITLE
TM 9-1300-206	Care, Handling, Preservation and Destruction of Ammunition
TM 9-1377-200-20&P	Organizational Maintenance Manual (Including Repair Parts and Special Tools List) Cartridges, Cartridge Actuated Devices and Propellant Actuated Devices
TM 10-1670-250-20	Organizational Maintenance Manual (Including Repair Parts and Special Tools List) Parachute System used with Martin Baker MK-J5D Ejection Seat
TM 43-0001-39	Army Data sheets for Cartridges, Cartridge Actuated Devices and Propellant Actuated Devices
TM 55-1500-204-25/1	General Aircraft Maintenance Manual
TM 55-1510-204-10/3	Operator's Manual: OV-1B Aircraft
TM 55-1510-204-10/4	Operator's Manual: OV-1C Aircraft
M 55-1510-204-23P	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools)
TM 55-1510-213-10	Operator's Manual: OV-1D/RV-1D Aircraft
TM 55-1510-204-23	Aviation Unit and Intermediate Unit Maintenance Manual OV-1B/OV-1C Aircraft
TM 55-1510-213-23	Aviation Unit and Intermediate Unit Maintenance Manual: OV-1D/RV-1D Aircraft
TM 55-1510-217-PMD	OV-1B, OV-1C, OV-1D and RV-1D Aircraft Preventive Maintenance Daily
TM 55-1510-217-PM	OV-1/RV-1 Series Aircraft Phased Maintenance Checklist.
DA PAM 738-751	Functional Users Manual for the Army Maintenance Management System - Aviation (TAMMS-A)

APPENDIX B

BASIC ISSUE ITEMS LIST

(Not Applicable)

APPENDIX C

PRELIMINARY MAINTENANCE ALLOCATION CHART

C-1. General.

a. The Maintenance Allocation Chart assigns maintenance functions to the lowest level of maintenance based on past experience and the following consideration:

(1) Skills available.

(2) Time required.

(3) Tools and test equipment required and available.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated.

c. A maintenance function assigned to a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance organization. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required or directed by the appropriate commander.

e. The assignment of a maintenance function will not be construed as authority to carry the associated repair parts in stock. Authority to requisition, stock, or otherwise secure necessary repair parts will be as specified in the repair parts appendix.

f. Normally there will be no deviation form the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc, required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility of the function. The higher level of maintenance has the authority to determine:

(1) If the lower level is capable of performing the work.

(2) If the lower level will require assistance or technical supervision and on-site inspection.

(3) If the authorization will be granted.

g. Changes to the Maintenance Allocation Chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

C-2. Definitions.

a. Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. Test. To verify serviceability and to detect electrical or mechanical failure by the use of test equipment.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust specified variable elements of an item to bring to optimum performance.

f. Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument or test equipment being compared with the certified standard.

g. Install. To set up for use in an operational environment such as an emplacement, site, or vehicle.

h. Replace. To replace unserviceable items with serviceable assemblies, subassemblies, or parts.

i. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting, and strengthening.

j. Overhaul. To restore an item to a completely serviceable condition as prescribed by maintenance serviceability standards prepared and published for the specific item to be overhauled.

k. Rebuild. To restore an item to a standard as nearly as possible to the original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements (items) using original manufacturing tolerances and specifications, and subsequent reassembly of the item.

C-3. Symbols.

a. The symbols O, F, H, and D represent Organizational maintenance (O), Direct Support maintenance (F), General Support maintenance (H), and Depot maintenance (D) and when placed on the Maintenance Allocation Chart, indicates the lowest level of maintenance responsible for performing the particular maintenance function. Maintenance levels higher than the level of maintenance marked by the symbol are authorized to perform the indicated function.

b. The symbol % % applies to organizational maintenance and indicates that the particular maintenance function may be performed provided it is specifically authorized by the direct support maintenance officer. In no case will the direct support maintenance officer require the accomplishment of a % % maintenance function by an organization or unit and in no case will a % % function authorize stockage of parts at organization level.

c. The symbol (*) in column 3 and 4 of the MAC denotes that a special tool is required to perform the indicated maintenance function.

d. The symbols (1 and 2) in column 3 of the MAC refer to footnotes on page (C-10) of the MAC.

MAINTENANCE ALLOCATION CHART FOR MK-J5D EJECTION SEAT

(1)	(2)	(3)											(4)	(5)
		MAINTENANCE FUNCTION												
GROUP NO.	FUNCTIONAL GROUP	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
01	COCKPIT FURNISHINGS													
	Ejection Seat Assembly	F		F					F	F				Seat Removed
	Top Latch Mechanism	0							F					
	Face Blind Assembly	F	F_1	F					F					
	Locking Mechanism and Linkage	F	0_1		F				F					
	Actuating Motor	F	0_1		F				F	F	H_2*			Seat Removed
	Main Beams	F							H_2					
	Slippers	F			F				F					
	Seat Bucket Assembly	F							F	H_2				Major Repair
	Sticker Clips	0	F		F				F					Minor Adjust
	Seat Pan Assembly	F							F					Seat Removed
	Seat and Back Cushions	0							0	F				Minor Repair
	Back Rest Assembly	F							F					Seat Removed

MAINTENANCE ALLOCATION CHART FOR MK J5D EJECTION SEAT

(1)	(2)	(3)											(4)	(5)
		MAINTENANCE FUNCTION												
GROUP NO.	FUNCTIONAL GROUP	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
	Thigh Support Pad	F							%%					
	Lower Firing Handle	F							F					
	Lower Firing Cable	F							F					
	Locking Mechanism and Linkage	F	F_1											
	Manual Override System													Seat Removed
	Override Handle	F							F	F				
	Linkage	F	F_1		F				F					
	Inertia Reel System													Seat Removed
	Control Handle	F							F					
	Linkage	F	F_1	F	F				F					
	Reel Assembly	F		F					F	F				
	Leg Restraint System													Seat Removed
	Snubber Assembly	F							F					

MAINTENANCE ALLOCATION CHART FOR MK-J5D EJECTION SEAT

(1)	(2)	(3)											(4)	(5)
		MAINTENANCE FUNCTION												
GROUP NO.	FUNCTIONAL GROUP	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
	Locking Assembly	F	0_1						F	F				
	Linkage	F	0_1		F				F					
	Oxygen System													
	Control Handle	0							0					
	Linkage	F	F_1		F				F					Seat Removed
	Oxygen Cylinder Assy	0		%%					0	F				
	Ejection Gun Assembly	F		F					F	H_2				Seat Removed
	Firing Mechanism	F*	F*						F					
	Guide Rails	F							H_2					
	Cartridges	F							F					
	Sear	F*	F^*_1						F*					
	Drogue Gun Assembly	F*	F*						F*		H_2			Seat Removed
	Barrel Assembly	F		F					F					

MAINTENANCE ALLOCATION CHART FOR MK-J5D EJECTION SEAT

(1)	(2)	(3) MAINTENANCE FUNCTION											(4)	(5)
GROUP NO.	FUNCTIONAL GROUP	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
	Trip Rod	F	F_1						F	F				Minor Repair
	Cartridge	F							F					
	Sear	F	F_1						F					
	Time Release Mechanism	F*	F*		H_2				F		H_2			Seat Removed
	Barostat Assembly	F	F*						F					
	Trip Rod	F	F_1						F	F				Minor Repair
	Sear	F	F_1						F					
	Personnel Restraint													
	Loop Strap	0	0_1	0					F*					
	Lap Belt (Center)	0		0					0					
	Leg Lines	F	F_1	0					F*					Seat Removed
	Garters	0	0_1	0					0					

MAINTENANCE ALLOCATION CHART FOR MK-J5D EJECTION SEAT

(1)	(2)	(3)											(4)	(5)
		MAINTENANCE FUNCTION												
GROUP NO.	FUNCTIONAL GROUP	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
	Harness Assembly	0	0_1						0					
	Drogue Parachute Pack	%%							%%					
	Personnel Parachute Pack	%%							%%					
	Personnel Parachute Restraint Straps	0							F					
	Personnel Parachute Canopy Release Fittings	0	0_1											Seat Removed
	Survival Kit	F	F	F					F	F				Minor Repair
	Guillotine System	F							F					
	Firing Mechanism	F	F						F					Seat Removed
	Guillotine Cartridge	F							F					
	Sear	F	F						F					
	TCR System and Rocket Motor	F							F					

NOTES

1. Maintenance Operational Check. (Refer to TB-AVN-23-16.)
2. Normally a depot function; however, where facilities skills, equipment, and test capabilities are authorized at H level, this function is authorized.

☆U.S. GOVERNMENT PRINTING OFFICE : 1990 - 262-842 (25153)

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL MANUALS

SOMETHING WRONG WITH THIS MANUAL?

THEN. . .JOT DOWN THE DOPE ABOUT IT ON THIS FORM. TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

FROM: (YOUR UNIT'S COMPLETE ADDRESS)
PFC JOHN DOE
CO A, 3d ENGINEER BN
FT. LEONHRD WOOD MO 63108

DATE

PUBLICATION NUMBER TM 55-1680-308-24	DATE 13 Dec 74	TITLE Ejection Seat, Model MK-J5D (Martin Baker)

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.
81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In the key to fig. 4-3, item 16 is called a shim. Please correct one or the other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN.

SAMPLE

DOTTED LINE

TEAR

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER JOHN DOE, PFC (268) 317-7111	SIGN HERE: John Doe

DA FORM 1 AUG 74 2028-2

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DRSTS-M Overprint 1, 1 Nov 78

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